An Investigation of the Strategic Drivers and Inhibiting Factors Affecting Electronic Commerce in Southern Africa

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Abstract

E-commerce is an area of business that is expanding rapidly, especially in developed countries. Its adoption is based on factors that enable and impede e-commerce growth. Previous research, conducted predominantly in developed countries such as the United States of America (USA,) has highlighted both enablers and obstacles to e-commerce growth. The goal of this study is concerned with determining whether these factors also enable, and inhibit, the advancement of e-commerce in developing countries.

Organisations, selected from Botswana and South Africa, were asked to complete a questionnaire stating their views on issues that affected e-commerce development. The questionnaire was divided into three areas. The first area, titled general, sought to gain information on the type of organisation that was responding, the designation of the respondent and the state of its e-commerce development. The second area required respondents to state their views on factors that inhibited e-commerce growth, covering areas such as security of transactions, infrastructure and bandwidth problems, cost of investment, taxation issues and the impact of site visibility. The third part of the questionnaire asked respondents about their views on factors that enabled e-commerce development, and dealt with issues such as revenue enhancement, customer resource management, cost reduction, business process efficiency and improvement of supply routes.

Responses were analysed using the Chi-squared test of significance for comparing discrete numerical data. The aim was to determine whether the results were consistent with those of similar studies conducted in developed countries. Furthermore, the statistical analysis also intended to determine whether there were any significant differences between the responses obtained from Botswana to those acquired from South Africa.

Analysis of the results showed that organisations in developing countries had similar views about factors that enable and impede e-commerce growth in developed countries. Areas such as security of transactions, for example, were not seen as major barriers to e-commerce growth, possibly due to the vast improvements made to technology for assuring online transactions. The results also showed that there are differences in knowledge regarding factors that affect e-commerce growth amongst organisations in developing countries. This was evident among the South African respondents who seemed to have more information on issues that affect e-commerce adoption, as compared to organisations surveyed in Botswana.

1. Chapter One: Introduction

The past few decades have witnessed an extraordinary change in the history of the world. Civilisations are being driven by the ever emerging technology changes and the impact these have had on revolutionising society, culture and politics (Matsepe-Casaburri, 2000). Technology offers new potential for development and progress, at the same time introducing new and demanding challenges, both to consumers, and suppliers of goods and services. Indeed, one of the profound changes brought about by technology to societies is in the area of commerce, now known as electronic commerce (e-commerce). Although e-commerce can be defined in many ways, it is essentially an emerging concept that describes the process of buying and selling or exchanging of products, services, and information via computer networks including the Internet. This type of commerce has, in many ways, created a marketplace without conventional rules, forcing role players to re-think the manner in which business is conducted.

E-commerce affects all major aspects of economic life and thus involves the integration of many elements, including technology, infrastructure, business operations and public policy (Matsepe-Casaburri, 2000). Traditionally, the Internet was used by organisations to simply market their products and not to sell these directly to consumers (McDonald, 1997; Leong, Huang and Stanners, 1998). However, this is changing as organisations are now using the Internet to not only market their goods and services, but to sell them directly to consumers. According to Chief Information Officer's special advertising supplement (1999), e-commerce has, and is continuing to become a popular method of conducting commerce in first world countries. This phenomenon is still emerging in developing countries, including those in Africa.

Various factors are seen to be enablers of e-commerce. However, there are also factors that are impeding the development of e-commerce. Ultimately what is needed,

is an environment that is conducive for conducting business and sharing information with confidence amongst consumers and suppliers in the marketplace.

Previous research has focused on identifying a range of both enabling and inhibiting factors of e-commerce, predominantly in developed countries. This study seeks to establish whether organisations from developing countries in Africa indeed agree that these are the factors that are also enabling and inhibiting their e-commerce development.

1.1 Statement of the Problem

The problem of the study investigated whether the factors that promote e-commerce development, and those that inhibit e-commerce development are also applicable in the context of developing countries, more specifically Botswana and South Africa. This study specifically sought to determine the following:

1. To ascertain the strategic drivers of e-commerce in African developing countries
2. To determine the factors that inhibit implementation of e-commerce in African developing countries

The study is important for three reasons. Firstly, it illustrates whether the enabling and inhibiting factors of e-commerce development identified in the literature apply to organisations in developing countries. Secondly, companies wishing to adopt an e-commerce approach as part of their business strategy will be able to use this study as a guideline when considering what factors should be taken into account when either improving, or establishing an e-commerce strategy. Thirdly, the research will also provide information about attitudes towards e-commerce in developing countries, given amongst other things, their position in terms of income disparity, unequal distribution of wealth and education.

1.2 Purpose and Objectives of the Research

1.2.1 Purpose

The purpose of the study was to examine whether the factors that enable and inhibit e-commerce adoption and development in developed countries, are also applicable in developing countries, more specifically Botswana and South Africa. Botswana was chosen as no similar studies of this nature have been undertaken there. The reason for choosing South Africa was due to its well-developed telecommunications and Internet infrastructure and can be used as a benchmark when conducting a study of this nature in the Southern African region.

1.2.2 Objectives

The research is aimed at providing a clear understanding of the state of e-commerce awareness and development in developing countries, using research samples from South Africa and Botswana. Specifically, the objectives of the study are to:

1 To demonstrate that the factors that enable and inhibit e-commerce adoption are applicable to organisations in developing countries.
2 To highlight any significant differences between the responses received form organisations in Botswana to those received from South Africa.
3 To explain any differences between the results of research conducted in developed countries to those found in this study.
4 To provide an insight into issues organisations in developing countries may face when wanting to implement e-commerce, or further develop existing e-commerce sites.

1.3 Theoretical Grounding for the Research

E-commerce adoption is dependent on several issues. On the one side, there are strategic drivers that influence organisations into wanting to implement e-commerce in order to increase marketability and hence sales. On the other hand, there are also inhibiting factors that detract organisations from adopting this kind of technology, as it is new and still being developed.

A greater emphasis toward strategic drivers than inhibiting factors should ultimately motivate an organisation into adopting e-commerce. Underlying this is the organisation's ability or capability for adopting e-commerce; does the organisation have the technological ability to implement e-commerce, which also determines whether e-commerce is adopted or not. Finally, there should be scope for the organisation to do so; the organisation should be in a position to judge whether a business opportunity to implement e-commerce exists in their market space.

1.4 Background to the Study

The transition of the global economy from that of an industrial focus to one based on knowledge and information presents numerous opportunities and challenges to organisations in developing countries (Matsepe-Casaburri, 2000). The advent of Internet technologies has given rise to new ways of conducting business. E-commerce is an emerging area amongst organisations in countries that have advanced telecommunications infrastructure. Shaw (1999) states that this type of technology can be used to improve the method of conducting business, and mentions the importance of developing an e-commerce strategy and its subsequent amalgamation into the business strategy.

Various issues influence the advancement of e-commerce and these may be broadly classified as inhibiting and enabling factors. Research including that of Corboy (1999) and Kalin (1999), indicate that security of transactions is seen to be an

inhibitor of e-commerce growth, even though there have been advances in technology to protect information transfer such as Secure Sockets Layer (SSL) and Secure Hypertext Transfer Protocol (SHTTP), as described by Stallings and van Slyke (1998). The lack of appropriate infrastructure and bandwidth is also one of the major inhibitors of e-commerce development (Bowen, 2000) and this is more so amongst developing countries in Africa (Matsepe-Casaburri, 1999; Jensen (a), 1999). Other major factors that are inhibiting e-commerce growth include cost of investment (Corboy, 1999; Bowen, 2000), the regulation of taxation of e-commerce transactions (Muscovitch, 1997; Matsepe-Casaburri, 2000) and poor site visibility (Doscher, 1998; Gordon, 1999). The process of globalisation also seems to be driven by technology (Lubbers, 1999). However, developing countries still lag behind in terms of technology and its acceptance. Jensen (a) (1999) notes that most of the infrastructure development in Africa is concentrated in urban areas, while the majority of rural dwellers have no experience with regard to the advancement of the digital revolution that is sweeping through developed areas (Koorevaar and Lubbers, 1998). Lack of knowledge and non-acceptance of technology are also major barriers to e-commerce development.

On the other hand, there are those factors which contribute to the development of e-commerce. These include revenue and sales channel enhancement (Cahners In-stat Group, cited in Chief Information Officer Special Supplement, 1999; Fingar, P, Kumar, H and Sharma, T, 2000), improving customer resource management (Strassel, 1998; Seegers, 1999) and cost reduction (Fingar et al, 2000). Other important enablers of e-commerce also include improving process efficiency (McWilliams, 1997; Corboy, 1999) and the improvement of supply chain management (De Figueiredo, 1999; Papows, 2000).

1.5 Definition of Terms

This section provides a definition of all abbreviations and principle terms that have been used in this paper. The purpose of this section is to ensure that the reader is better informed in the areas of discussion.

- **Internet** – A collection of computers that are linked through a network, where each computer is assigned equal responsibility for receiving, interpreting and transmitting network information.
- **Electronic Commerce (E-commerce)** – Term used to describe the use of Internet technology to conduct economic transactions between buyers and sellers of goods and services.
- **eBusiness (Electronic Business)** – Term used to describe the use of Internet technology to conduct e-commerce as defined above, but also expanded to within the organisation as well, such as empowerment of the workforce using Internet technology.
- **Revenue enhancement** – An increase in the amount of revenue generated as a result of the adoption of e-commerce.
- **Customer Resource Management** – Improving customer service to increase the customer base and thus, revenue income.
- **Bandwidth** – The amount of space available on the Internet that determines the speed at which information flows between a buyer, seller and third parties.
- **Cryptography** – method used to electronically scramble financial information during a typical purchase transaction over the Internet using a credit card.
- **Developing Country** – country that may be classified as poor or undeveloped but is becoming more advanced economically and socially. For the purpose of this dissertation, this term is used to describe countries that meet the above definition, but focus on the under-development of their information and communication infrastructure to the extent found in countries such as the United States of America.
- **Teledensity** – number of active telephone lines/connections per square area which can be used to access an ISP in order to get connected to the Internet.
- **Hacking** – access of an organisation's computer system by unauthorised parties with the intention of causing malicious harm.
- **IRG** – Information Research Group
- **CSO** – Central Statistics Office

- **ROI** – Return On Investment
- **EDI** – Electronic Document Interchange
- **SET** – Secure Electronic Transaction
- **SSL** – Secure Sockets Layer
- **SHHTP** – Secure Hypertext Transfer Protocol
- **DSA** – Digital Signature Algorithm
- **DES** – Defence Encryption Standard
- **ISP** – Internet Service Provider
- **SME** – Small and Medium Enterprises
- **ICT** – Information and Communication Technology
- **IT** – Information Technology
- **OECD** – Organisation for Economic Cooperation and Development
- **WTO** – World Trade Organisation

1.6 Scope of the Study

The scope of the study was delimited by the researcher in two ways. Firstly, the study was geographically restricted to Botswana and South Africa. Secondly, the research was delimited to organisations chosen at random from databases held by organisations in both countries having access to this information. Thirdly, the research does not attempt to make any conclusions based on the industry type of the organisations surveyed. Hence, care should be taken in extrapolating the research results to populations outside Botswana and South Africa, and to those located in developing countries in other areas of Africa and indeed the rest of the world.

The study has also been restricted by certain conditions that were beyond the writer's control. The voluntary nature of the respondents may have limited the results of the study. It is possible that the responses from organisations who chose not to participate in the study differ significantly from those received. The study has also been limited by the use of data derived from mailed questionnaires. The differential effects that mailed questionnaires, as opposed to interviews, may have had on the respondents has not been examined.

These factors may explain the reason for the low response rates as well as restricting the generalizability of the findings. Furthermore, since the data was gathered within a relatively short space of time, and given the rapid change in technology adoption and usage, there is no method in the procedures to measure how the findings may have changed recently or may be expected to change in the near future.

1.7 Overview of the Study

As has been previously stated, the purpose of this research was to ascertain whether the enabling and inhibiting factors related to e-commerce development, as identified in the literature, are also applicable to developing countries in Africa. The second chapter deals with an overview of the supporting literature relevant to the topic. The methods and procedures of the study are presented in chapter three, and the results and discussion are presented in chapter four. The final chapter of the study is concerned with the summary of the purpose of the study, supporting literature, and the methods and procedures used for the research. This is followed by a section on the practical implications of the study. The chapter concludes with suggestions for future research.

2. Chapter Two: Literature Review

2.1 Introduction

As has been previously stated, the purpose of this research was to ascertain whether the enabling and inhibiting factors related to e-commerce development, as identified in the literature, are also applicable to developing countries in Africa. The chapter deals with the review and analysis of the studies relevant to this topic, and is divided into seven sections as follows:

- The first section provides an introduction to e-commerce strategy.
- The second section examines the factors that inhibit the growth of e-commerce.
- The third section focuses on the strategic drivers, or enablers, of e-commerce.
- The fourth section focuses on the process of globalisation and its relationship with technology.
- Section five examines Internet status in Africa. The topics covered under this section include the state of broadcasting, telecommunication development and the status of hardware and software usage in Africa.
- Section six looks at the economic and social impact of e-commerce in developing countries.

2.2 E-Commerce Strategy

Electronic commerce, or e-commerce as it is popularly known, may be defined simply as "conducting business electronically" (Corboy, 1999). Kalin (1999) stresses that one of the largest hurdles faced by companies attempting to implement e-commerce is the development of an e-commerce strategy. She suggests that aligning business and technology strategies is important when trying to formulate a successful e-commerce business model. For e-commerce to succeed Corboy (1999) and Shaw (1999) emphasise that when implementing e-commerce, organisations should not focus solely on technology, but aim towards assessing their business as a whole. This

process should take place in the form of an e-commerce strategy (Shaw, 1999). The term 'strategy' may be defined as "...plan of action or policy in business..." (Oxford Dictionary). Thus, the concept of "e-commerce strategy" reflects the amalgamation of technology (computers and networks) and appropriate plans or policies that allow business transactions to take place across an electronic medium. In this case, the medium is the Internet which provides an open, ubiquitous, and affordable means to carry out business electronically for all participants in a market place (Balthazard and Koh, 1999). Shaw (1990) summarises this very well by drawing on three important aspects organisations should consider simultaneously when developing a working plan of their potential e-commerce strategy. These are:

- Develop the vision that will drive the adoption of e-commerce in the organisation;
- Address the issues (drivers and potential impediments) facing e-commerce adoption; and
- Work with the technology that is available and suitable for e-commerce development in that particular organisation. This would involve selection of appropriate web development software and hardware that will support the business objectives.

Shaw (1999) mentions the following "initial" steps that are important, and should be taken into consideration, when developing an e-commerce strategy:

- Senior management must understand and commit the resources needed in order to gain benefits from the implemention an e-commerce strategy.
- Develop overall project plans for the organisation.
- Establish a dedicated project team whose primary function is to understand the information technologies available and their impact on business processes.
- Develop an appropriate model that describes how a particular industry might function in the digital economy.
- Develop a digital business model identifying all relevant content, context, or infrastructure that add value for customers.

- Conduct a detailed redesign of top priority processes with the intent of automating them where necessary.
- Developing a suitable organisational structure that identifies all the people skills required to support the e-commerce strategy.
- Establishing the architecture of the hardware, software, and networks required to support the e-commerce strategy.
- Educating employees about the changes that will take place, how they might be affected and their individual roles in the change process.
- Engage in constructive dialogue with trading partners about the benefits of doing business electronically.
- Assessing and defining future changes that might affect current (or planned) e-commerce strategy.

2.3 Factors Inhibiting the Growth of E-Commerce

Even though e-commerce is contributing to the globalisation of markets (Morell and Brown, 1999), it does not come without its pitfalls. Several issues have been identified in the literature, which are seen to inhibit the development of e-commerce. These include:

- Security,
- Infrastructure and bandwidth problems,
- Investment costs,
- Taxation,
- Site visibility, and
- Various other factors which include ease of doing business, increasing brand/product recognition and establishing cost effective processes. These are discussed on the following pages.

2.3.1 Security

Concerns over the security of transactions are becoming a barrier to the growth of e-commerce (Morell and Brown, 1999). One of the main differences between e-commerce and traditional commerce is that electronic transactions are largely impersonal and anonymous, creating a feeling of insecurity in the minds of consumers (Matsepe-Casaburri, 2000). Even though the Internet opens up a wider market, it also presents a greater threat to companies' confidentiality and integrity (Mort, 2000). Corboy (1999) states that the perceived lack of security is one of the biggest barriers limiting the growth of e-commerce in the United Kingdom and Ireland. Matsepe – Casaburri (1999) advocate that security problems are confronting governments and businesses, which feel the need to secure geographically dispersed networks against theft, fraud, abuse and even 'electronic terrorism'. According to Kalin (1999), the following factors were hindering the development of e-commerce sites:

- Security-confidentiality
- Privacy
- Prevalent immature protection of proprietary data through cryptography and authentication.

Studies conducted by the Cahners In-Stat Group (Chief Information Officer Special Supplement, 1999) showed that addressing security of transactions was the number one concern of organisations wishing to improve e-commerce success. Six main security issues arise, as stipulated by Corboy (1999) and Han and Noh (2000):

1. Information that is intercepted, read or modified illicitly and interference or intentional rerouting of traffic or the flooding of a local Web site server with inappropriate traffic in order to crash or cripple the server;
2. Users gaining access to information by using a false identity to commit fraud and unauthorised altering and downloading of information by persons not

granted permission to do so. Mort (2000) adds that there are various types of users who might attempt to gain illegal access. They include the following:

- "Hackers"- those who develop tools and techniques to exploit a system's vulnerabilities
- "Crackers" - those who use tools and techniques developed by "hackers" to try and break into systems
- "Phreakers" - those who concentrate on cracking phone systems
- "Cuberpunks"- those who try to decrypt encryption

3. Unauthorised users on a network gaining access to another resulting in unauthorised transactions by non-approved parties;
4. Parties denying engagement in transactions. This raises the issue of whether current law protects the rights of parties transacting over the Internet;
5. Unauthorised disclosure, meaning viewing of Web information by an individual not given explicit permission to have access to this information; and
6. Misrepresentation/false use of data, resulting in offering of false credentials, passwords or other data

The use of malicious software is a potential threat to any information system that is used to support e-commerce transactions. Examples of these threats include viruses which may be spread from computer to computer, degrading system performance, reformatting hard disks or even deleting important files (Mort, 2000). Trojan Horse viruses can be used to carry an alien piece of software onto the system. These open links from the system on which they reside to the Internet. The danger here is that the links may give third parties partial or total control over an organisation's system.

Disgruntled employees account for 80% of information technology breaches in organisations (Mort, 2000). These employees use their knowledge of the organisation to disrupt business or to defraud the company. Activities carried out by these

employees include the introduction of malicious software, breaking into another employee's computer and accessing confidential files, or emailing confidential information to competitors over the Internet.

Confidence and trust are important when developing an e-commerce strategy. Consumers are wary of divulging financial information, as they fear manipulation or misuse (Morell and Brown, 1999). Access to the Internet, network availability and connectivity are issues that need to be addressed when establishing target markets. Rizzo (1999) states that a survey conducted with banks in the United Kingdom and Ireland found that the respondents believed the largest (negative) impact on e-commerce was insecurity of transactions.

Morell and Brown (1999) claim that skills possessed by consumers and associated "digital literacy" (education on the concepts of electronic commerce such as web browser and online ordering), if low, can inhibit the effective use of electronic means to conduct business. Han and Noh's (2000) research also found that an unstable system (a system that did not offer easy navigation and was slow in presenting information to users) was one of the main critical factors that inhibited e-commerce growth along with lower levels of data security.

2.3.1.1 Web Security Products

Significant progress has been made in building secure web servers and browsers. Two security mechanisms that have achieved the most widespread acceptance are known as secure sockets layer (SSL) and secure hypertext transfer protocol (SHTTP) (Stallings and van Slyke, 1998). Both mechanisms have provided reasonable levels of security for online transactions by using robust encryption processes. Stallings and van Slyke (1998) argue that the use of encryption technologies has allowed clients and servers to negotiate acceptable levels of security during the communication process.

2.3.1.1.1 The Encryption Process

The sender creates a message which is encrypted with the recipient's public key (see Figure 1 below). The public key is obtainable though a common certification authority. The message is "hashed" (calculating a checksum variable) and encrypted with the sender's private key, and sent to the recipient over the Internet. Upon receipt of the message, the recipient decrypts the hash value with the sender's public key. This hash value is compared to the one generated by the recipient with the same algorithm used to calculate the hash value. If the hash values match after decrypting the message with his or her private key, the message is authentic. The most common encryption algorithms in use today include RSA (Rivest Shamir Adleman), Digital Signature Algorithm (DSA) and Defence Encryption Standard (DES), with RSA regarded as widely being the most secure algorithm (Null and Parnell, 1999).

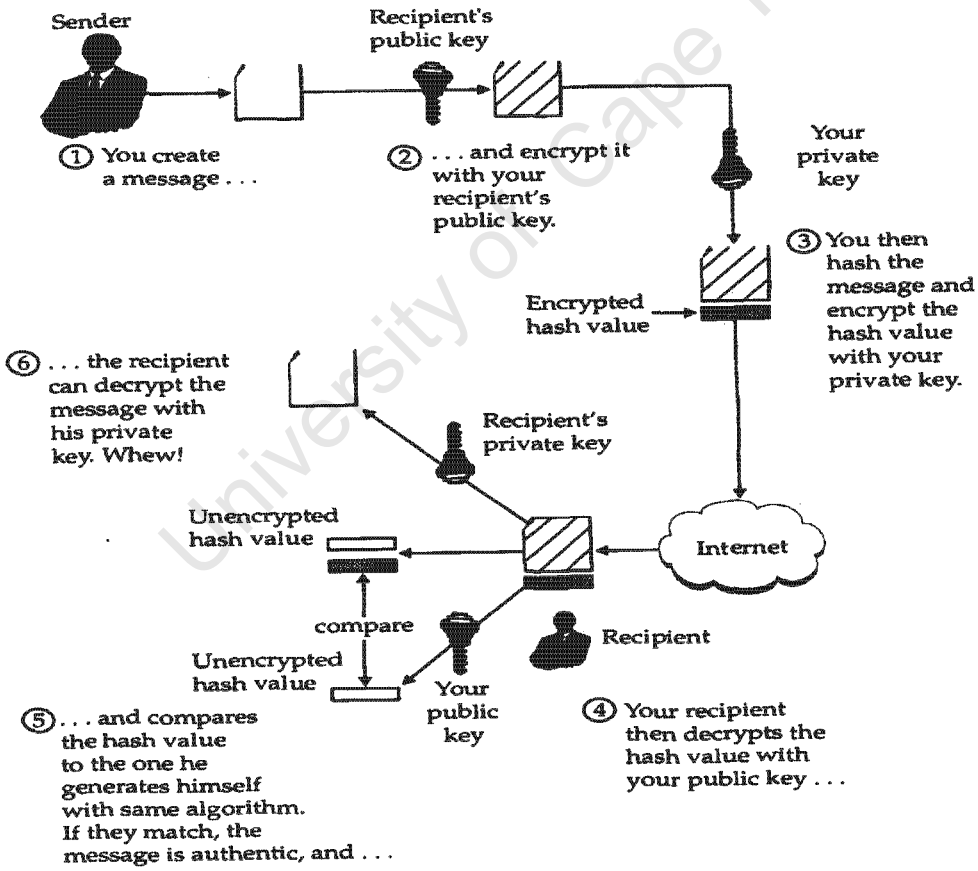

Figure 1: The Encryption Process (Null and Parnell, 1999)

2.3.1.2 Safeguarding Against Security Breaches

There are various measures which, if adhered to by organisations, assist in the reduction of security breaches to an information system used in e-commerce transactions. Mort (2000) identifies two measures which may be used by organisations to combat security threats: information risk management and penetration testing.

Information Risk Management

Information risk management follows a structured approach that "forces" the company to think about what is crucial to business continuity. It identifies assets and gauges threats to these assets, measures the impact of a potential threat to the assets, and identifies counter measures available to protect the business from the threats identified. Information risk management also focuses on areas external to the organisation that may affect the organisation's business operations such as physical security and fire prevention systems.

Penetration Testing

Penetration testing involves the use of tools and techniques to attack a network via the Internet and from within an organisation. This helps to identify weaknesses found with the security mechanisms operational in the network as well as recommendations for additional measures that may be necessary in order to prevent "hacking".

2.3.2 Infrastructure and Bandwidth

Research conducted by Corboy (1999) states that infrastructure and bandwidth problems rank as one the main inhibitors of e-commerce. This is echoed by research conducted by the Cahners In-Stat Group (Chief Information Officer Special Supplement, 1999) on factors that are necessary to improve e-commerce.

Many first time users of the Internet express disappointment at the response time when accessing and downloading information. According to Bowen (2000), e-commerce will bypass the developing world with only 6 percent of e-commerce transacted in Africa, South America and parts of Asia. The slow growth potential for e-commerce in the developing world is, in part, attributed to amongst other factors such as cost of investment (discussed later), a lack of infrastructure.

According to Bowen (2000), there are six times more phone lines per inhabitant in the United States than in South Africa. Like so many developing nations, South Africa is struggling to provide telephone connections to disadvantaged and rural communities. For example, Bowen's (2000) research found that only 4,7% of the population of South Africa own a personal computer. Together this explains the low Internet penetration observed above.

Businesses are not as directly constrained by lack of resources in using e-commerce as consumers are, but they face the same infrastructure problems which can easily throttle the growth of e-commerce related trade (Jensen (c), 1999). For example, even in the capital cities, limited availability of bandwidth can lead to loss of customers who become impatient while waiting for pages to download, and the inability of the telecom operators to meet the growth in demand for reliable voice and data circuits can keep businesses from expanding the reach of their services (Jensen (c), 1999).

Matsepe-Casaburri (1999) further points out that in South Africa, telecommunication and networking facilities are largely unavailable to many small and medium-sized businesses, making the distribution of these technologies inequitable. Morell and Brown (1999) agree with these contentions that due to current bandwidth problems, small to medium enterprises may not be able to compete in the electronic marketplace, simply because they cannot afford to pay for dedicated lines.

Bandwidth cost, performance and availability of Internet technology must also improve if organisations wish to take advantage of e-commerce (Rizzo, 1999). Trepp

(1999) echoed Rizzo's analysis of bandwidth availability, stating that if consumers had access to higher and acceptable levels of bandwidth, they would spend more time shopping on-line. Ernst (2000) agrees with this view that in order to promote global e-commerce, uptime of networks, their reliability, guaranteed throughput and speed determine the success of global brands. Han and Noh (2000) also state that inappropriate infrastructure and slow download speeds inhibit consumers when searching and comparing brands.

On the contrary, Papows (2000) asserts that the convergence of advanced messaging systems, groupware, and the Web provides the technical foundation needed to support enterprise-wide knowledge management. Correct use of these types of technology can improve (and decrease) infrastructure and bandwidth problems. This could be achieved with the correct configuration of the above-mentioned environments thereby ensuring that only relevant information is filtered and used to maximise use of area required to convey information across the enterprise.

2.3.3 Cost of Investment

Organisations will experience initial capital costs when setting up the infrastructure for e-commerce. These include costs such as design of their web site and payment of a connection fee to an Internet Service Provider (ISP). Costs may vary depending on the extent of development required and the amount of funds available to organisations (Corboy, 1999).

The cost factor would be an important one especially in developing countries such as South Africa, where many small businesses are finding it hard to compete against large local and international firms that have already established themselves and are using e-commerce to some extent. Research conducted by the Cahners In-Stat Group (1999) showed that accessibility and availability of the above mentioned services were also seen to be important when improving e-commerce. However, Chambers

(1999) advocates that the high cost of investing in e-commerce infrastructure will eventually decline given the diminishing costs of technology.

According to Bowen (2000), massive investments are still being made in building the infrastructure to support the rapid growth of new economies. The University of Texas estimates that infrastructure expenditure accounts for 50% of the total Internet economy (Bowen, 2000). This not only includes telecommunications related expenditures, but also hardware and applications. With the exception of some areas in Europe and Asia, the United States is seen to be the information technology powerhouse in the world - particularly in the field of Internet technology (Bowen, 2000).

Research conducted by Acuity Media Africa (1999) showed that companies surveyed in South Africa reported low returns on investment, despite high levels of spending. This was as a result of high expenditure on development of infrastructure. The report further stated that this trend is not expected to change significantly in the short term, as customers' demand increasingly more sophisticated transaction and security solutions. The report added that in the longer term, profits are expected to rise dramatically as infrastructures mature.

2.3.4 Taxation

The accurate identification of parties responsible for paying a particular tax is a fundamental requirement of any taxation system (Matsepe-Casaburri, 2000). The shift from a physically oriented commercial environment to a knowledge-based electronic environment presents serious and substantial issues that need to be addressed. The nature of a country's regulatory and legislative environment to a large extent determines e-commerce success or failure (Bowen, 2000), adding that legislation affects the amount of spending on Information and Communication Technology (ICT) infrastructure.

Policies on taxation and trade determine the level of investment a country can attract. Developing a skilled labour force is dependent on government budget and plans for national human resource development. One of these is the position of existing regulatory frameworks with respect to the taxing of electronic transactions (Muscovitch, 1997). Taxation of electronic transactions and the imposition of import duties on such transactions as they cross international boundaries may be difficult for governments to administer as e-commerce grows (Matsepe-Casaburri, 1999). This is especially important in developing countries as tax forms an important part of government revenue.

Cogburn, cited in Bowen (2000), holds the view that there is a need for e-commerce to be exempt from customs duty and taxation. Another recent United Nations Centre For Development And Trade publication, "Building Confidence: Electronic Commerce and Development" also touches on similar aspects of e-commerce. A debate currently exists over the issue of taxation of e-commerce. There is growing public pressure for a "tax-free cyber world", which is seen as a necessary condition for the development of the new telecommunication technologies (Bowen, 2000).

The Electronic Commerce Association of South Africa has cautioned government not to regard e-commerce as merely another source of tax revenue (Lunsche, 1999), and further states that there is the possibility that restrictive legislation and taxation in South Africa will result in computer servers (hardware responsible for hosting an e-commerce site) being moved to a less policed country. However, Matsepe-Casaburri, cited in Lunsche (1999), announced a number of "key principles" that would guide the process of taxing e-commerce transactions. These guidelines include "harmonisation with international rules on e-commerce, improving Internet access to all citizens and laws that are 'technology neutral' (laws that apply to e-commerce transactions regardless of the technology that is adopted". Ngcaba, cited in Lunsche (1999), states that the South African government is adopting a "broad approach" when

eliminating barriers between rules governing "normal" and e-commerce transactions, including taxation.

One of the potential problems of e-commerce is repudiation, which means the denial by one of the transacting parties that an online transaction took place (Han and Noh, 2000). This issue also needs to addressed by governments if e-commerce transactions are to be taxed correctly. Other areas of concern include principles governing access to the records of electronic money transfer, infringement of intellectual property and the identification of commercial website owners (Matsepe-Casaburri, 2000). These are also seen by the South African government as areas of importance that need to be taken into account when considering the possibility of a legal framework applicable to e-commerce.

2.3.5 Site Visibility

The Cahners In-Stat Group (1999) found that site visibility was also one of the factors that was important for improving e-commerce. Doscher (1998), when interviewing Web experts for the Wall Street Journal, found that the following were held to be important when assessing web appeal:

- Visually appealing layouts,
- Good prices and services offered by the organisation represented by the web site,
- Easy-to-navigate sites, and
- Relevant information offered on the web site.

Gordon (1999) reports that a significant amount of e-commerce will be driven by people visiting web sites. Content of web sites is important as well, and as Gordon (1999) points out, is one of the key drivers of attracting consumers to transact on the Internet.

The need for small and medium sized enterprises to benefit from e-commerce through the production of "local content for global networks", including language and cultural diversity is also seen to be of importance in order to attract potential customers to web sites (Bowen, 2000). However, according to the Cape Times (2000), research has shown that having a web page may not be enough. Consumers tend to search for information from a number of sources and most web surfers looking to purchase goods and services tend to do so from a number of sites. This indicates that there seems to be little brand loyalty to individual web sites.

Ernst (2000) states that "e-businesses" need to expand globally in order to stay competitive. Site visibility is certainly important in this case, although Ernst (2000) argues that in order to stay competitive, e-business operations needs to provide users with sites that provide content that is locally relevant. A person accessing an English web site in a country where English may not be the first language might be tempted to skip the web site. This could be potential loss of business for a company wishing to promote itself over the Internet.

Fingar et al (2000) argue that organisations wishing to be successful in an e-commerce environment need to deploy stand-alone corporate web sites which provide meaningful information and variety to customers. These web sites need to be attractive and should be able to capture a customer's attention and induce them into wanting to explore the site. To enhance site visibility, organisations need to participate in multiple market spaces. This essentially means providing links to other sites, advertising products from other markets and providing customers with a way in which to access related products quickly and efficiently.

2.3.6 Other Factors

Other factors which are seen to be inhibitors of e-commerce include:

- Ease of use of the interface,
- Education/customer confidence,
- Keeping the site up-to-date, and
- Improving the online ordering/payment process.

In addition to the above, it is clear that the availability of sufficient human resources will continue to be an overriding issue in many areas of e-commerce (Jensen (c), 1999). This view is shared by Bowen (2000), who states that human resources may become the real bottleneck in the development of South Africa's Internet economy. Many skilled people are still leaving the country while new immigration laws make it difficult for qualified people to enter the country. In addition to this, rural areas in particular suffer with very scarce expertise in computer maintenance and software troubleshooting. With the very low pay scales in the African civil service this problem is virtually insurmountable for government infrastructure operators who are continually losing their brightest and most experienced to the private sector (Jensen (c), 1999).

The major problem in the area of human resource development, according to Jensen (c) (1999) is that the pool of expertise in the region is relatively small (at all levels, from policy making to use of technology), which contributes to the limited deployment of applications and infrastructure, and the high price of access.

2.4 Strategic Drivers of E-Commerce

Sterling Commerce (1999) advocates that when organisations want to implement e-commerce, their objectives are not to solely increase revenues or increase competitiveness. Research shows that in addition to revenue enhancement (with the intention to increase profits) and competitiveness, organisations have other reasons for wanting to implement e-commerce. These factors may also be construed as drivers of e-commerce as well as reasons for improving existing e-commerce strategies. These are discussed below.

2.4.1 Revenue and Channel Enhancement

According to research (Cahners In-Stat Group cited in CIO, 1999) carried out in the United States, many firms are realising that implementing e-commerce will lead to "projected increased revenue of 20 to 21 percent by 2000-2001" (CIO, 1999). Apart from increased revenues, Sterling Commerce (1999) further postulates that the implementation (or improvement) of e-commerce strategies will enable organisations to raise their market shares, protect existing market shares, reach new markets and improve global partnerships. A survey by the Cahners In-Stat Group (cited in CIO, 1999) aimed at finding out strategic drivers of e-commerce, also found that e-commerce was seen to expand the number of potential buyers, a view shared by Fingar et al (2000). This was rated as the top driver by the organisations surveyed. Further research showed that projected increase in sales was also a driving force coupled with the perception that e-commerce provided a new sales channel (Cahners In-Stat Group, cited in Chief Information Officer Special Supplement, 1999).

Dell Computer Corporation (McWilliams, 1997) sees e-commerce as an integral part of the company's direct sales business. By tailoring web pages to be customer-centric, Dell has managed to persuade its corporate clients to purchase online. The

result of this strategy was a 20% sales growth per month (McWilliams, 1997). By using electronic payment technology, Dell converts the average sale to cash in less than 24 hours (predominantly through the use of credit cards). Research conducted in South Africa by Acuity Media Africa (1999) showed that projected sales from e-commerce increased substantially when compared to 1998 figures. For example, sales figures for 1998 were R500-million. However, this figure has gone up to R1.2-billion and business surveyed expected this figure to rise in subsequent years.

2.4.2 Customer Resource Management

Sterling Commerce (1999) found that e-commerce was seen by organisations as being important for business when it came to customer management. Organisations surveyed acknowledged that e-commerce allowed them to keep their current customers, and will enable them to improve customer service (Cahners In-Stat Group, cited in Chief Information Officer Special Supplement, 1999), for example, by recording customer preferences on-line and offering custom services. Fingar et al (2000) further state that organisations who obtain more information about their customers and their buying behaviour allows them to learn which customers actually contribute to the bottom line. In certain cases, organisations can provide customers with total solutions based on their buying history and purchase requirements, allowing customers to conduct "one-stop shopping" (Fingar et al, 2000). Chambers (2000) advocates that companies must be customer driven in order to gain customer loyalty and thus increase their profit margins.

According to Corboy (1999), e-commerce also allows for cross-selling to customers. This essentially means that customers who enter a web site may be able to also purchase other products or services from different firms on-line, thus expanding the business-to-consumer relationship. Research conducted by the Cahners In-Stat Group (1999) also found that e-commerce is seen to be an effective way of providing more information to customers.

Strassel (1998) points out that e-commerce has also "taken off" in Europe. This report quotes Forrester Research, which found 52% of Europe's financial institutions were starting to sell products online. Many of the firms implementing e-commerce (or establishing a Web presence) did so with the objective of providing "passive savings to customers" (Strassel, 1998).

Organisations who establish a web presence can take advantage of two attributes which can provide them with competitive advantage: "flexibility", and "speed" (Seegers, 1999). "Speed" is used in the context of online purchasing as opposed to ordering via phone or fax (where confirmation might not be immediate, creating a delay). "Flexibility" allows customers to conduct business at their convenience (and not at their suppliers convenience).

Seegers (1999) emphasizes the importance of using e-commerce as a major component of business strategy as it leads to an increase in the organisation's customer base, a view shared by Anders (1998), who asserts that the biggest lure of Internet shopping is convenience. Once a web site is built, it can take orders "around the clock" and product catalogues can be updated without the extra costs of printing (Anders, 1998). For firms to exploit the Internet market, they must ensure that consumers must perceive better value for their money, the content must be compelling, relevant and tailored to the appropriate market (Rizzo, 1999).

Product information on the Internet will provide more meaningful and detailed information of products available to a consumer, enabling more intelligent buying decisions (Rossini, 1999). In addition, Rossini (1999) advocates that using Internet technology allows businesses to personalise information for their customers. De Figueiredo (1999) adds that this allows merchants to offer individual discounts to customers based on their buying history and preferences, provides one-to-one marketing and reaches out to more consumers worldwide. Fingar et al (2000) further point out that one-to-one marketing is a new frontier for gaining competitive advantage.

McWilliams (1997) states that Dell is able to improve customer service by developing and implementing e-commerce set-ups for the majority of its clients. This would enable them to place orders directly with Dell, thus qualifying for discounts and various other incentives.

Weil (1999) quotes research carried out by Ernst and Young as stating that increases in online shopping is preferred to the hassle of shopping in crowds in shopping malls. Their research found that online shoppers seemed to be those with the most constraints on their time. However, the research further stated that to attract and successfully manage customers, e-commerce merchants need to identify their target audience and provide good customer service, a view shared by Papows (2000), who also states that customers expect immediate responses, even to complex problems. This can only happen if all the necessary information and relevant know-how are available online (Papows, 2000). Fingar et al (2000) agree with this contention that in the world of electronic consumer markets, the goal of organisations wanting to capture a large proportion of the market must be to build an ever-deepening relationship with a customer to meet as wide a variety of the customer's needs as possible.

Research conducted by Acuity Media Africa (1999) shows that while consumer oriented e-commerce will fall under "the shadow business-to-business e-commerce", a relatively small proportion of this will represent a conversion from a traditional business environment to one that is Internet based. Thus, the report argues that a higher proportion of business-to-consumer e-commerce will represent new business. This is in contrast to business-to-business e-commerce, where trends show that there will be no significant increase in market share; only conversions from traditional to Internet based environments.

2.4.3 Cost Reduction

A number of studies (Corboy, 1999; Sterling Commerce, 1999) shows that e-commerce can lead to cost reduction. These include:

- Lower internal costs, for example selling and order processing costs
- Expedition of cash flow
- Elimination of intermediaries
- Reduction of communication costs

Organisations can also save on marketing costs, which includes producing brochures, catalogues and other forms of company information (Fingar et al, 2000). All of these can be published on the web site, and is freely available to customers online. Another example would be customers who are expecting goods from delivery services such as Federal Express (FedEx) can track their order progress on-line, saving FedEx the costs of providing that information telephonically, ultimately reducing the charges to customers. Fingar et al (2000) further advocate that organisations with real-time connections to their suppliers can significantly reduce or even eliminate warehousing, shipping and inventory costs.

2.4.4 Process Efficiency

E-commerce is also seen by companies such as General Electric as a means to improve process efficiency within the organisation (Corboy, 1999). Sterling Commerce (1999) elaborates on this by stating that organisations can improve supply chain management, order management and demand planning processes via the use of the appropriate technology. E-commerce is also seen as a way of assisting organisations to meet business partners' demands, keep pace with competition and optimise human resource deployment within the organisation. Dell Corporation, for example, through the use of e-commerce, is able to assemble and produce equipment in a very short space of time (McWilliams, 1997).

Fingar et al (2000) suggest that e-commerce is carried out in the Internet Market (I-Market). This is defined as the virtual place of exchange (of goods and services) between buyer and seller in cyberspace. Fingar et al (2000) argue that since e-commerce occurs in a "virtual" environment, barriers such as time fall away completely. A customer can purchase products or browse through a virtual shop 24 hours a day, 365 days of the year. The concept of "normal business hours" falls away in the context of e-commerce. Thus, allowing customers to browse and purchase at their own convenience further enhances process efficiency.

2.4.5 Improve Supply Routes

A survey to establish how e-commerce could influence supply chain management in general by the Yankee Group quoted in Sterling Commerce, (1999) showed the following to be the major drivers behind a company's decision to conduct Web commerce.

- Improvement of Order Management
- Expedition of Cash Flow
- Improvement of Supply Chain Management
- Improvement of Global Partnerships
- Improvement of Demand Planning

Supply chains can be influenced if customer buying patterns could be analysed (Seegers, 1999). This enables sellers to gauge who their main suppliers are, thereby taking advantage of any volume discounts offered by improving their order management (which is in-line with what was established by the Yankee Group survey – see above). By using e-commerce technology, firms can manage their supply chain thus "getting their products to the right places in the right quantities at the right time and at the lowest cost" (De Figueiredo, 1999). In addition, by employing e-commerce

infrastructure, firms can manage their supply chain entirely on the Web (De Figueiredo, 1999). This would ultimately benefit consumers, while providing a competitive edge to the organisation employing e-commerce technology. Anders (1998) concurs with this view, stating that through the use of Internet technology, organisations can reduce inefficiencies and avoid the high cost of paper records.

As organisations engage in closer working relationships with their suppliers, they become exposed to many more sources of potential learning (Papows, 2000). These interactions allow companies to enhance their levels of knowledge, ultimately improving their knowledge management. E-commerce also provides organisations with an opportunity to learn from companies outside their own industry (Papows, (2000).

Acuity Media Africa (1999) suggest that the key success factor behind business-to-business commerce over the next five years will be the extent to which businesses integrate their existing supply chains with the Internet. This is largely based on existing business transactions being transferred into an e-commerce environment, rather than new business being generated by e-commerce. The same report also states that the key benefit is dramatic cost-cutting in supply chain management, before improved profits. The argument here is that early integration of traditional and online strategies will mean lower cost of entry to a competitive e-commerce environment, and potentially higher market share in the short and medium term.

2.4.6 Other Factors

Research conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999) identified the following as significant enablers of e-commerce:

- Increasing brand/product recognition;

- Ease of doing business;
- Counteracting competitive pressure; and
- Establishing cost-effective processes.

Other "drivers" identified by Morell and Brown (1999) that influence the establishment of e-commerce strategies include:

- Reducing transaction and search costs
- Reducing the distance between the buyer and seller
- Enabling businesses to target very small niches and to hence develop individual customer profiles

E-commerce is changing the ways buyers (or customers) interact with sellers (or suppliers). This creates opportunities for suppliers to establish new brand identities around the quality of their customer service (Seegers, 1999).

2.5 Globalisation

Globalisation is a process of rapid change and integration of communication systems, financial markets and political ideology (Lubbers, 1999). The process of globalisation seems to be driven, at least in part, by technology, (e-commerce being a major component of this). In an earlier article, Koorevaar and Lubbers (1998) defined globalisation as "the process by which the world becomes smaller".

The digital revolution makes it possible to run economies 24 hours a day through the coordination of economic activities on a global scale (Koorevaar and Lubbers, 1998). The digital revolution also makes it possible to move people, goods and especially symbols faster through space, than has been possible before. This widens business horizons even further. In this new era of digitalisation and globalisation, production is changing from industrial goods to production of knowledge, information and services. This change will promote that next to capital, knowledge will become of growing importance as a basis of power (Koorevaar and Lubbers, 1998).

The Commission of the European Communities (1999) state that globalisation is now a fundamental development component of all the industrial and emerging economies and for virtually all manufacturing or service industries. One major aspect of globalisation is the growing importance of services relative to manufactured goods and, more recently, the emergence of a new networked economy using technology as the driving force behind business transactions. The Commission of the European Communities (1999) further argue that technological evolution favours globalisation. The development of the information society plays a driving role through the installation of global digital networks linking a multitude of actors. This contributes to a new global economy based on networks and intangible assets.

With the "death of distance", access to world markets for example by European Union companies is counterbalanced by similar access by their competitors to European

markets. Web sites marketing goods or services are consulted to compare and analyse prices and business strategies. Figures on the salaries on offer also circulate faster.

Electronic commerce is a catalyst synonymous with greater market transparency and immediate global competition. Even in traditional labour-intensive industries, e-commerce is a powerful driver of change and an incentive to competition. It favours the diffusion of varied products and services. For Small and Medium Enterprises (SMEs), market niches, their traditional targets, can now be exploited globally. Innovative start-up companies and SMEs can have access to global markets and acquire an international dimension from the beginning. At the same time, electronic commerce is engendering entirely new activities, in particular new intermediaries, for example, logistics companies, certification and authentication services and credit-rating agencies. In 1996 the Internet generated 1.1 million new jobs throughout the world, 760 000 of these located in the USA (Commission of the European Communities, 1999).

According to Lubbers (1999) however, globalisation is responsible for creating deficits compromising the way in which economies are run. Two of these are security and social deficits. Firstly, lack of security, according to Lubbers (1999) is responsible for cross-border crime, inability of governments to respond to civil violence in other countries, while they have become so visible because of Information Communication Technology (ICT). Secondly, a social deficit leads to increasing inequality (within and between countries) in incomes and in the ability by consumers to use new technologies. Furthermore, Koorevaar and Lubbers (1998) state that a number of problems related to globalisation such as corruption, transboundary crime, tax evasion, and the management of cultural diversity can hinder the development of efficient e-commerce systems.

2.6 Internet Status in Africa

The communications and information infrastructure has improved dramatically in Africa over the past five years (Jensen (a), 1999). Frequent use of the Internet, satellite television and cellular phone usage is now becoming widespread on the continent. However, this seems to have been confined to people living in the cities, as the majority of people living in rural areas do not have access to telephones, and thus do not have access to the Internet (Jensen (a), 1999).

2.6.1 Telecommunication

The number of telecommunication lines is growing at a rate of 10% a year (Jensen (a), 1999). Much of this growth is concentrated in urban areas, where approximately 10% of the population lives (Darkwa and Mazibuko, 2000). South Africa has the majority of telephone lines in sub-Saharan Africa, a region which is considered to have the "least developed telephone infrastructure" (Jensen (a), 1999) when compared on a worldwide basis. Littenberg (1997) supports this argument stating that high import tariffs and low competition amongst vendors have led to high hardware costs as opposed to low per capita income. This indicates that many Africans simply cannot afford technology needed to access the Internet, much less conduct e-commerce transactions.

Countries such as Botswana and South Africa have adopted aggressive policies to develop their communications infrastructure. For example, most of the telecommunication infrastructure is composed of digital and fibre-optic links that connect most major centres. According to Jensen (a) (1999), this development surpassed that of the United States where digital infrastructure is only 49.5% compared to 100% in Botswana and South Africa. Cellular technology has also advanced and is growing phenomenally (Jensen (a), 1999). Botswana and South

Africa are also amongst the few countries that have managed to increase teledensity above one in fifty people, indicating higher accessibility of telephones for the people.

State owned monopolies are seen to be the major cause of inefficient business processes, poor service and slow growth (see figure 2). The blue dot indicates the presence of an independent regulator, whereas the red one indicates the absence of an independent regulator. Furthermore, one of main inhibitors of telephone usage are the above average tariffs charged by service providers (Jensen (a), 1999), leading to high Internet usage costs (see figure 3).

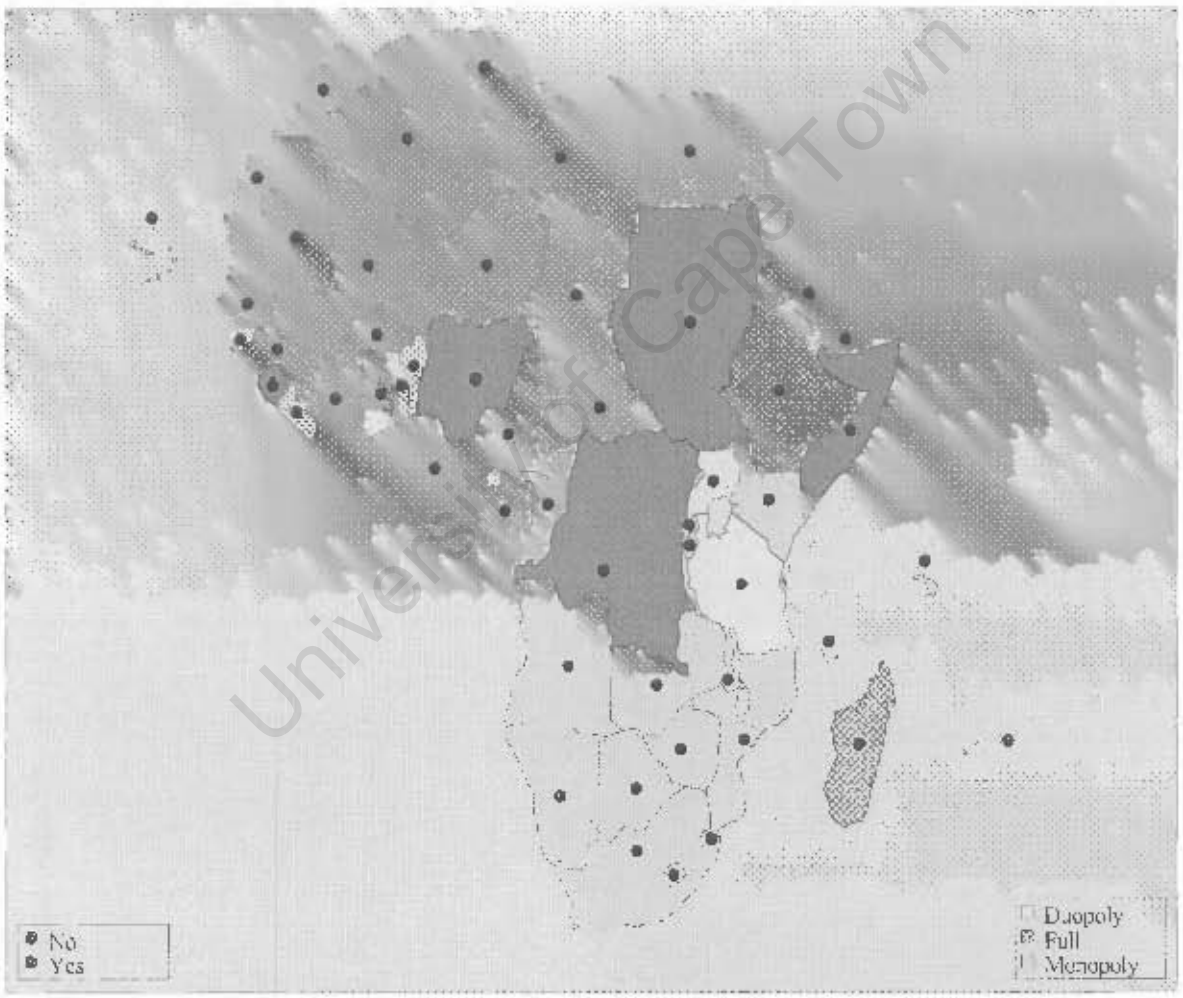

Figure 2: Countries having state monopolies over telecommunication services (Jensen (a), 1999)

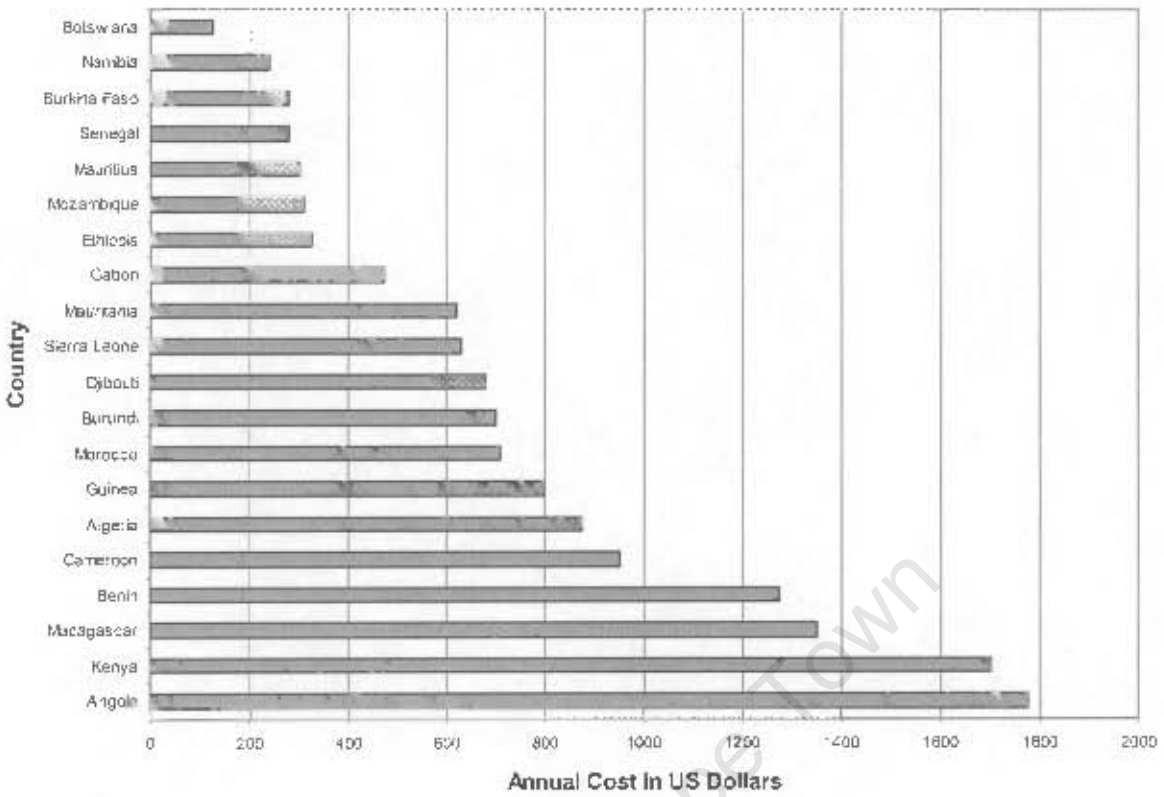

Figure 3: Comparison of Internet usage costs in Africa (Jenson (b), 1999)

For example, there are long waiting lists of people wishing to install a telephone service, which seems to add to the problem of non-connectivity. The Commission on Enterprise, Business Facilitation and Development within the United Nations Centre For Development And Trade is also active in researching the impact of e-commerce on global development. In July 1999, a paper entitled, "Can Electronic Commerce Be An Engine for Global Growth?" was published by the United Nations Centre for Development and Trade. Under the scope for action, one of the areas that needed attention was accessibility to the Internet (Bowen, 2000), indicating that the high cost of Internet access prohibits its use amongst small users in developing countries, especially those residing in rural areas.

The high cost can possibly be reduced by the increase in service providers which could result in telephone charges being reduced due to competition thus leading to

more connectivity. South Africa has the highest number of internet service providers compared to all African nations, resulting from high demand and the large number of users who have telephone access. According to Jensen (c) (2000), many telecommunications operators have started to provide Internet connectivity and associated services. E-commerce activity is seen to be increasing by 1800%, indicating the high potential for growth (Bowen, 2000).

2.6.2 Hardware and Software

Countries such as Botswana, Mauritius and South Africa have significantly high levels of personal computer users, estimated to be around 20 users per hundred people (Jensen (a), 1999). The majority of people using computer equipment emanates from the private sector, where word processing and spreadsheet programs seem to be the frequently used applications. Odedra et al (1993) argue that even though the quantity of hardware is increasing in many sectors of the African economy, the level of software penetration has been low, attributable to the shortage of skills and training in their use.

Jensen (a) (1999) notes that there is under utilisation of existing computer resources. For example, many computers use a modem to access the Internet. This has lead to increased competition amongst users for a single computer and email facilities – not conducive to effective use of the Internet (Jensen (a), 1999). However, Jensen (a) (1999) points out that the use of free and open-source software is gaining popularity. Operating systems such as Windows and Linux are supplied with web browsers and email applications such as Internet Explorer and Netscape Navigator, allowing users to operate in an integrated environment.

2.6.3 Internet Connectivity

The Internet is now becoming widespread in Africa. Low cost communications and access to global information sources has fuelled rapid adoption, especially in most capital cities in Africa (Jensen (b), 1999). Due to high connectivity fees and access rates, the number of Internet users remains relatively low. African Internet users are estimated to be around 1.5 million (Jensen (b), 1999), the majority of these according to Littenberg (1997), are located in South Africa (Table 1 depicts information on the Southern African Internet Population).

Country	ISPs	Internet Accounts	Internat. Bandwidth (Kbps)	ISP Mono poly	Call Cost ($/hr)	1998 Population (1000s)	Population / Internet User	96 GDP /Person	Users / Kbps Internat
South Africa	120	330,000	90000	No	1.60	44296	134	3230	4
Mozambique	6	5,000	512	No	0.80	18691	3,738	77	10
Mauritius	6	13,000	4096	Yes	1.00	1154	89	3508	3
Swaziland	3	900	256	No	0.95	932	1,036	1389	4
Malawi	3	2,400	128	No	1.56	10377	4,324	142	19
Zambia	3	3,000	256	No	1.60	8690	2,897	382	12
Angola	5	4,000	192	No	6.00	11967	2,992	355	21
Namibia	6	3,000	1536	No	1.00	1653	551	2059	2
Botswana	6	3,400	768	No	0.60	1551	456	3640	4
Zimbabwe	17	10,000	2048	No	4.00	11924	1,192	786	5
Madagascar	5	1,500	2556	No	0.43	16346	10,899	215	1
Lesotho	1	200	512	No		2184	10,920	486	0

Table 1: Southern African Internet Population Comparison (adapted)

At the same time, telecom operators can play a vital role in reducing the costs for those who are a long distance call from the Internet, such as in many Francophone African countries (and some Anglophone ones) where a special local call tariff applies to calls made to the Internet from anywhere in the country (Jensen(c), 1999).

Even though a local call is required to access the Internet, local call costs are still relatively high, constituting most of the total cost of regular Internet access. This has a great negative impact on the end-user who usually cannot afford to spend any significant time on the web, largely because of the local call cost, a situation attributable to the fact that most Internet access takes place through a foreign gateway

resulting in higher charges (Littenberg, 1997). As a result, email-only services are common in Africa and email-based e-commerce transactions which minimise online time are likely to attract a greater number of customers. In a later report, Jensen (c) (2000) states that the African web space is expanding rapidly and almost all countries have some from of local or internationally hosted web server. However, there are still generally few institutions that are using the Web to deliver significant quantities of information, and few use the Internet to provide services in the area of e-commerce. Reasons for this include limited numbers of people who have access to the Internet, the limited skills available for digitising and coding pages and the high costs of local web hosting services (Jensen(c), 2000).

Sectors that have started to use the Internet to market themselves are predominantly government, tourism and media organizations. According to Bowen (2000), out of the approximately two million Internet users on the African continent, 90% of them are in South Africa and those using the Internet in South Africa are predominantly White. Unless rapid steps are taken to ensure that developing countries are assisted in gaining speed in terms of universal service, internet access, human resource development, capital investment and policy reforms, "e-commerce could cause a digital divide between the information rich and the information poor" (Bowen, 2000).

Insufficient bandwidth is another inhibiting factor of Internet usage, due to the relatively poor telecommunications infrastructure found in developing countries in Africa (Jensen(c), 2000). However, Botswana and South Africa are amongst the Southern African countries that have relatively high bandwidth links, thus improving the speed of connectivity (see figure 4).

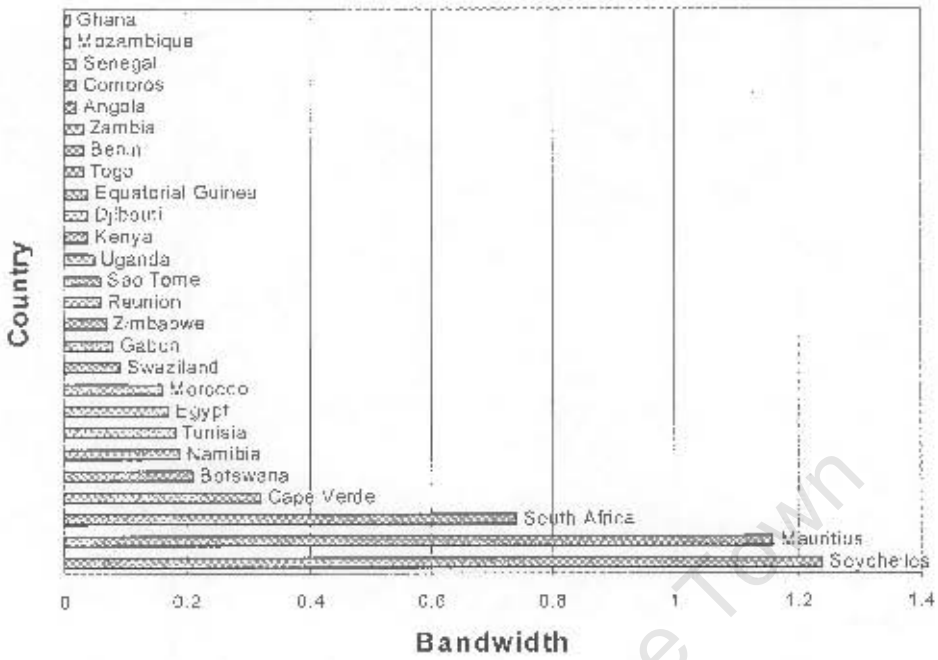

Figure 4: Comparison of Bandwidth amongst African countries (Jensen (b), 1999)

2.7 Economic and Social Impact of E-Commerce in Developing Countries

The development of e-commerce is rapidly transforming many aspects of the basic social and economic structure of the world and this is especially important in developing countries in Africa (Kargbo, 1997). Business relationships are becoming more global in nature, and there is a movement from the 'Industrial Age" to the "Information Age" (Matsepe-Casaburri, 1999). For developing countries such as South Africa, one of the most important benefits of e-commerce is the potential to help society leapfrog into the knowledge, or information age. Categories of issues arise as a consequence of implementing e-commerce, particularly benefits that

developing countries might gain with the adoption of successful e-commerce strategies.

The Discussion Paper on Electronic Commerce Policy for South Africa (Matsepe-Casaburri, 1999) identifies the following economic and social impacts that may result from emerging e-commerce development.

2.7.1 Economic Impacts

The following are some of the significant economic impacts resulting from e-commerce adoption:

- The rapid pace of technological change and the global nature of markets could result in developing countries falling behind wealthier and more advanced economies, especially if they do not 'keep up' with technology developments. Papows (2000) echoes this view when he states that operating in multiple parts of the world requires modern IT systems, given the time, distance and volume constraints. However, once companies establish an appropriate IT infrastructure which allows online sales and marketing, the chances of establishing sustainable competitive advantage in their niche markets increase significantly.

- E-commerce presents opportunities for less developed countries to expand their markets, both internally and externally. Internally, groups of citizens may gain access to financial services on-line, enabling them to participate more actively in the economy. External expansion can be accomplished through the use of the Internet and other technologies, allowing low-cost international trade, even for small, local businesses.

- Business can be carried out from any location, as technology will allow connectivity even in rural areas. This is especially important for rural areas,

where the development of infrastructure is low. Ultimately, the paper states that, in theory, there should be potential for business expansion in all areas of the country if e-commerce is developed and used optimally.

2.7.2 Social Impacts

The Discussion Paper points out that e-commerce could have a social downside to it. It may reduce the 'personal touch' experienced during transactions, creating 'de-socialisation' of individuals who will have less and less direct contact with their peers, co-workers, and perhaps their community. Conversely, equitable deployment of infrastructure and educational resources could provide a means of maintaining and expanding family and communal ties that would otherwise be broken by distance and cost, a view shared by Morell and Brown (1999). The following are some of the significant social impacts resulting from e-commerce adoption:

- The Discussion Paper suggests that the psychological and physical health-related effects of sedentary, computer-anchored work environments have not fully been examined. Policies need to be put in place to offset any effects on people not used to working in the 'electronic environment'.

- On the whole, e-commerce may offer the potential for shifting the balance of opportunity, wealth, and social and political inclusion. One can gauge the benefits of this, but there are pitfalls here as well. It is possible that e-commerce may bring unanticipated effects on cultural and social norms, and in some instances, creating resistance to change.

- The effect on the workforce is another important issue that needs to be considered by policy makers. Morell and Brown's (1999) research showed that e-commerce (and the use of IT by the workforce) generally increased the amount of work, even

though it offers the advantages of reduced travel time, the ability to co-ordinate work projects over great distances and a greater ability to avoid workplace distractions. However, technology may erode the need for 'manual' jobs and the impact on employee earnings could be adverse. How will trade unions, for example, respond to e-commerce as being the main source of conducting business, replacing human capital with hardware and software? These are issues that need to be addressed by the public and private sector in developing countries, especially those that are have high unemployment figures.

Hodge and Miller (1996) cited in Hall (1998) state that South Africa is ranked seventeenth in the world in terms of absolute numbers of hosts recognised by national domains, an advanced cellular communications network (comparable to European networks) and a substantial community of Internet subscribers. South Africa has 95% of the continent's hosts while Botswana, Namibia and Zimbabwe share about 1% of hosts. South Africa has well over 80% of the total cellular subscribers in the continent (Hall, 1998). This implies that South Africa is likely to play a major role in future expansion of the Internet and the realisation of related possibilities such as e-commerce (Hodge and Miller (1996) cited in Hall (1998)).

Furthermore, Hodge and Miller (1996) cited in Hall (1998) point out that there is a severe shortage of telephone lines in rural areas in South Africa, restricting the opportunities for commercial expansion and thus alienating potential entrepreneurs in these areas. One of the possible solutions is to use wireless Internet services to bring about connectivity of services such as banking and other 'entrepreneurial-promoting' services. The potential for this type of development is strong as Hall (1998) states that telecommunications prices are falling in South Africa, and there is considerable political and economic pressure on national regulatory authorities to allow free competition.

2.8 Summary of Literature Analysis

Chapter two has presented a review and analysis of selected literature covering those factors that enable as well as inhibit e-commerce development. To facilitate the presentation, the chapter was arranged into five sections.

The first section provided a definition of e-commerce and the importance of an e-commerce strategy, presenting the steps that are necessary for the creation of an e-commerce strategy. Some of these include senior management education, process redesign and the formulation of an appropriate organisational structure that supports an e-commerce environment.

The second section identified the main factors that inhibit the growth of e-commerce. These included concerns around lack of security, insufficient infrastructure and bandwidth problems, the high cost of investment, issues around taxation of e-commerce transactions, the importance of web site visibility, and various other factors.

The third section documented those factors that were regarded as strategic drivers/enablers of e-commerce, motivating organisations to implement e-commerce. These included revenue and channel enhancement, improving customer resource management, reducing selling and marketing costs, improving business process efficiency, enhancing supply channels and various other factors.

The fourth section looked at the process of globalisation and how this affects developing countries. Studies in this area indicate that developing countries need to keep pace with first-world countries in order to improve their economies. This may only be achieved through improvements in technology and its use thereof.

Section five provided information on Africa's status in terms of the state of broadcasting, telecommunication development and the status of hardware and software usage amongst selected countries in the continent. The literature suggests that there is a substantial need for development especially amongst African countries, especially in improving basic computer literacy, as well as providing adequate telecommunication links to all parts of society. The literature concludes that only then can the full scope of the Internet can be utilised thus allowing organisations in Africa to remain competitive with those from the rest of the world already taking advantage of e-commerce.

Finally, section six examines the economic and social impact brought about by e-commerce in developing countries. On the economic side, the literature indicated the necessity for developing countries to keep up with richer nations in terms of technology in order to improve their wealth, thus benefiting the population as a whole. This would also improve their marketability allow more small to medium enterprises to trade in a larger market. On the social side, the literature pointed out that exposure to an electronic environment needs to be managed to prevent large social upheavals and loss of "personal touches" during business transactions. However, e-commerce may provide a means for transactions between buyers and sellers to occur which may have otherwise been constrained due to factors such as cost and distance.

The literature has provided a list of enabling and inhibiting factors relating to e-commerce development. The following chapters test their validity amongst organisations situated in developing countries of Africa, specifically those in Botswana and South Africa.

3. Chapter Three: Research Method

3.1 Introduction

Chapter three presents the methods and procedures of the study. For the purpose of presentation, the chapter has been divided into four sections: Statement of the null - hypothesis, description of the subjects used in the research, description of the research instrumentation, and a description of the procedures used to obtain data.

3.2 Null - Hypothesis

The following is the null-hypothesis which was posited for testing in the study.

"There is no significant difference at the 0.05 level of confidence between the responses received from organisations in Botswana and those collected amongst organisations in South Africa on factors that inhibit and enable e-commerce development".

The author asserts that organisations in Botswana are beginning to realise the value of e-commerce, even though organisations in South Africa may have already done so in some areas. Regardless of the differences, it is important to establish whether the strategic drivers and inhibitors obtained in the literature survey hold for organisations in developing countries, such as those in Botswana and South Africa.

3.3 Description of the Subjects

The subjects for this study were organisations based in Botswana and South Africa. The majority of organisations chosen included those from the retail, wholesale and

manufacturing sectors. A description of the sources from which the sample frame was obtained is provided in the next sub-section.

3.3.1 Target Sample

Organisations were selected using a random sampling method. No particular emphasis was placed on a particular type of industry. Any indication of bias towards a particular industry is purely coincidental. The sample frame used in the survey was obtained from two sources. They were the Information Research Group - IRG (South Africa) and the Central Statistics Office (CSO), located in Botswana. The following sections provide a brief background of each entity:

3.3.1.1 Information Research Group (IRG)

IRG is a specialist business research and IT company based in South Africa. The group has international research partnerships through the Saratoga worldwide benchmarking programme and have managed global business studies in different industry sectors. IRG also conducts joint research projects with leading universities and experts in Europe, North America and South Africa. IRG's clients are predominantly local ones. However, some of their clients are based internationally. In total, their client base numbers approximately 200. Some of these include the Department of Labour, South African Airways, Namibia Chamber of Commerce, and a number of major South African businesses.

As a result, the group maintains a comprehensive collection of contact details of organisations based in South Africa. Questionnaires were sent out to organisations which were randomly picked from the address database obtained from the IRG Group.

3.3.1.2 Central Statistics Office (CSO)

The CSO forms part of the Ministry of Commerce and Industry. Its primary function is to establish a reliable statistical database which is used for research purposes and

ultimately, strategic economic planning. As a result, the office keeps a comprehensive record of contact details for all registered organisations in Botswana both in the private and non-private domain. Questionnaires were sent out to organisations which were randomly picked from the address database obtained from the CSO.

3.4 Description of Research Instrumentation

3.4.1 The Research Instrument

The research instrument consisted of an author-developed questionnaire, and consisted of 17 **main** questions. Some questions had sub-questions that broke down particular areas of a topic into their components in order to obtain more information in a particular area. The formulation of questions was based on factors (enabling and inhibiting e-commerce development) identified in the literature survey, as one of the objectives of this paper is to establish whether the factors that enable and inhibit e-commerce development in developing countries are also applicable for developing countries such as Botswana and South Africa. The researcher acknowledges that apart from test-running the questionnaire with participants, no other validity checks were conducted on the questionnaire. However, the researcher believes that the questionnaire sufficed as a data-gathering instrument for the purposes of this particular study, as the factors that were under investigation were clearly outlined and described as such. This provided the respondents with a clear understanding as to what was required from them. A copy of the questionnaire can be found in Appendix A.

The questionnaire was split into three major sections. The first section, entitled "General", contained seven questions that were designed to obtain information about the type of organisation the respondent worked for, their designation and information on the current state of e-commerce in their organisation. All questions allowed

respondents to select an option with the exception of two questions. These expected respondents to write down their opinions (see questions 5a and 5b in the questionnaire) in paragraph format.

The second section, entitled "Factors Inhibiting Growth of E-Commerce", contained 11 questions, and was aimed at obtaining respondents' views on factors that were seen to be inhibiting e-commerce growth. The third and final section, entitled "Factors Enabling the Growth of E-Commerce", contained nine questions, and was used to obtain respondents' views on factors that were seen as enablers of e-commerce. All questions from sections two and three expected respondents to either tick a "Yes" or "No" response. This allowed respondents to go through the questionnaire relatively quickly while still providing the researchers with valuable feedback. Any question with no response (i.e. no tick had been placed as an answer) was treated as an "I don't know" response.

3.4.2 Motivation for Questions used in the Questionnaire

This section outlines the reasons for using the specific questions contained in the research questionnaire. The questionnaire was split into three sections: General, Factors Inhibiting the Growth of E-Commerce, and Factors Enabling the Growth of E-Commerce. Each section is discussed and all questions in each section are presented and motivated for.

3.4.2.1 General

This is the first section of the questionnaire. Its purpose is to ascertain what types of organisations are participating, the designation of the person answering the questionnaire and whether the organisation has an e-commerce strategy. This section contains the following questions:

Please indicate your designation/position in your organisation:

- **Chief Executive Officer**
- **Managing Director**
- **Information Technology/Systems Director**
- **Information Technology/Systems Manager**
- **Chief Information Officer**
- **General Manager**

Other: .....

The aim of this question is to determine the position or designation of the person answering the questionnaire. The researchers hope to determine which person will answer the question and thus try to ascertain the level of importance given to the issue of e-commerce in the organisation.

Is your organisation based in:

- **South Africa**
- **Botswana**

The research sample includes organisation in South Africa and Botswana. The researchers would like to present data on how many organisations responded from each country.

Are you directly involved in the decision-making process of your organisation's Information Technology (IT) strategy?

- **Yes**
- **No**

The aim of this question is to determine whether the person answering the questionnaire is technology-competent and therefore will have knowledge of e-commerce. If involved in the IT strategy decision-making process, the respondent is likely to have significant influence in the adoption (or non-adoption) of e-commerce.

Please indicate the type organisation you represent/work for:

- **Retail organisation**
- **Wholesale organisation**
- **Non-profit organisation**

Other: .....

This question will allow the researchers to categorise the organisations from which responses have been received. The results of this categorisation would also enable the researchers to determine whether there is a correlation between the type of organisation and the adoption or non-adoption of e-commerce.

Does your organisation carry out e-commerce activities such as sales, marketing, support, or operations on the Internet?

- ☐ **Yes**
- ☐ **No**

If yes, which activity/activities is/are carried out?.....

.....

.....

.....

If no, briefly indicate why not.....

.....

.....

.....

The purpose of this question is to determine, at a preliminary level, whether the organisation is aware of and is currently engaging in e-commerce activities. It is useful since it provides information on the state of e-commerce activity or non-activity.

Does your organisation have the appropriate skills to implement and maintain an e-commerce?

The purpose of this question is to ascertain whether the organisation has the knowledge or skills amongst its IT workforce to successfully implement e-commerce. Responses to this question will reflect whether there is a skill shortage or abundance amongst organisations wanting to implement e-commerce.

Does your organisation have an e-commerce strategy (please tick the appropriate option)?

- ☐ **Yes**
- ☐ **No**

The aim of this question is to determine whether the organisation is taking e-commerce seriously and to ascertain the number of organisations that include e-commerce as part of their strategic plan. This would also help the researchers to determine whether e-commerce is seen to be the way of doing business in the future.

Do you believe that government has an adequate policy towards encouragement of e-commerce?

- ☐ **Yes**
- ☐ **No**

Various issues arose in the literature survey that related to government's role in promoting e-commerce. Some of these were appropriate legislation (or the lack thereof) that governs e-commerce transactions and also taxation of e-commerce transactions. While governments may have their own views on e-commerce, and indeed these may differ with those that organisations have in the business world, it is interesting to determine how organisations see government's role in promoting e-commerce. Thus, the aim of this question is to ascertain whether organisations perceive government in taking a positive stance on e-commerce or not.

3.4.2.2 Factors Inhibiting the Growth of E-Commerce

This is the second part of the questionnaire. Its purpose is to accumulate information about factors that are inhibiting the growth of e-commerce. These factors have been identified after an extensive literature survey and have been categorised accordingly.

Five major categories have been identified and are the following: security of transactions, lack of appropriate infrastructure and bandwidth problems, cost of investment, taxation and site visibility. The reasons for asking questions under the mentioned categories are outlined below.

Security of Transactions

Is the issue of confidentiality/privacy of transactions a barrier to e-commerce in your organisation?

- **Yes**
- **No**

The aim of this question is to determine whether e-commerce supports confidentiality and privacy of transactions of parties transacting over the Internet. According to various research, this is one of the key inhibiting factors that seems to be impeding e-commerce advancement.

Does your organisation feel that current law does not protect the rights of parties transacting over the Internet?

- **Yes**
- **No**

The aim of this question is to determine whether repudiation of transactions is inhibiting e-commerce development. The question also seeks to find out whether respondents are aware of legislation governing e-commerce.

Does your organisation feel that there is significant potential for users to gain access to information such as credit card numbers by using false identification?

- **Yes**
- **No**

The purpose of this question is to ascertain the level of security that exists and whether it is sufficient for preventing fraud during e-commerce transactions.

Does your organisation feel that current methods of cryptography and authentication of financial information are inhibiting growth of e-commerce?

- **Yes**
- **No**

The purpose of this question is to determine whether current authentication methods are viewed as not being sufficiently adequate in impeding the occurrence of fraud and the falsification of information such as credit card numbers, which are an integral part of an e-commerce transaction.

Lack of appropriate infrastructure and bandwidth problems

Does your organisation lack the infrastructure to implement e-commerce?

- **Yes**
- **No**

The aim of this question is to ascertain whether organisations wishing to implement e-commerce have the necessary infrastructure and skills to do so. Even though e-

commerce is becoming a popular method of expanding markets, many organisations still do not have the necessary skills and computer systems to harness the advantages e-commerce offers. According to the literature survey, it is seen as one of the major hurdles in the adoption of e-commerce. It may be so especially in developing countries and this needs to be addressed if it is indeed the case.

Does your organisation feel that slow connection problems are inhibiting e-commerce implementation?

- **Yes**
- **No**

Currently, insufficient bandwidth seems to be causing frustration amongst consumers, as they have to wait for transactions to be processed over the Internet. The aim of the question is to determine whether this is a major impediment in developing countries.

Does your organisation feel that telecommunication and networking facilities currently being used in South Africa/Botswana are inadequate to support e-commerce?

- **Yes**
- **No**

The purpose of this question is to ascertain whether organisations feel that more development is needed in the telecommunications sector in order to encourage and sustain efficient use of the Internet for business purposes.

Cost of Investment

Does your organisation have the capital and financial resources to implement an e-commerce site?

- **Yes**
- **No**

Since the lifting of sanctions, South Africa is now open to free trade and as a result, more competition. Thus, organisations have to find new ways of capturing new markets or at least expand current markets. E-commerce is a viable option but as financial resources are scarce, organisations may be discouraged to go the e-commerce route given the high capital costs of setting up a web site, implementing servers and providing continuous maintenance to these sites. The question aims to determine whether organisations are in a position to finance such a venture.

Taxation

Does your organisation feel that current tax legislation inhibits the implementation of e-commerce?

- **Yes**
- **No**

There is an on going debate at government level about whether current tax laws cater for Internet transactions. There are views which suggest that there should be separate tax legislation for organisations conducting e-commerce transactions. Therefore, this question tries to establish whether current tax laws are a major issue that may dissuade organisation from implementing e-commerce.

Would separate taxation on e-commerce transactions dissuade your organisation from implementing e-commerce in your organisation?

- **Yes**
- **No**

This question aims to establish whether organisations prefer that e-commerce transactions should fall under existing tax laws or should they be treated separately under new tax laws specifically catering for Internet transacting.

Site Visibility

Do you believe that poor web site design is a major inhibiting factor of e-commerce transactions?

- **Yes**
- **No**

Even though an organisation may have a web site, customers feel that some of these may be difficult to navigate through, thus dissuading them to explore and perhaps even transact with the organisation. The aim, therefore, of this question is to determine whether organisations feel that site visibility and ease of use is important in order to successfully capture potential customers, or is it simply too expensive to maintain web sites.

3.4.2.3 Factors Enabling the Growth of E-Commerce

This is the third part of the questionnaire. Its purpose is to accumulate information about those factors that are enabling the growth of e-commerce. These factors have been identified after an extensive literature survey and have been categorised accordingly. Five major categories have been identified and are the following:

revenue enhancement, customer resource management, cost reduction, process efficiency and improve "supply" routes. The reasons for asking questions under the mentioned categories are outlined below.

Revenue Enhancement

Does your organisation believe that e-commerce provides a significant way of increasing sales revenues?

- **Yes**
- **No**

Information from surveys and research conducted showed that one of the major reasons for implementing e-commerce was to expand markets and thus increase sales revenues. The purpose of this question is to establish whether organisations in South Africa and Botswana share this view.

Does your organisation believe that e-commerce provides new sales channels and new markets?

- **Yes**
- **No**

The purpose of this question is to determine whether e-commerce is the only way that allows organisations to expand their reach using technology.

Customer Resource Management

Does your organisation believe that e-commerce will assist in improving customer service?

- **Yes**
- **No**

This question aims to ascertain whether e-commerce is an efficient way to improve customer service as compared to face-to-face dealing with customers.

Does your organisation believe that e-commerce provides customers with comprehensive and up-to-date information on products, thus allowing them to make useful buying decisions without asking for assistance from your organisation directly?

- **Yes**
- **No**

The purpose of this question is to determine whether information on web sites is sufficient in order for a customer to make buying decisions as they would if they were to physically arrive at the organisation's premises.

Does your organisation feel that e-commerce provides customers with flexibility in terms of shopping at their own convenience?

- **Yes**
- **No**

The aim of this question is to establish whether customers prefer to conduct shopping during times that are convenient to them, or whether they do not mind doing shopping

during hours stipulated by the organisation selling the goods or services. In essence, the researchers are attempting to demonstrate whether there is a significant relationship between the time of transacting and the purchases made in terms of quantity and value.

Does your organisation believe that e-commerce will provide customers with more detailed product information, thus enabling more intelligent buying decisions?

- **Yes**
- **No**

The purpose of this question is to establish whether e-commerce sites have sufficient information that enable customers to make purchasing decisions more efficiently and at their own pace, disregarding the barriers of shopping hour restrictions and the like.

Cost Reduction

Does your organisation believe that e-commerce can significantly reduce selling costs incurred by the organisation when marketing their products?

- **Yes**
- **No**

The aim of this question is to determine whether organisations perceive e-commerce sites to reduce the cost of selling goods and services, thus reducing the price at which goods and services are sold to the customer.

Process Efficiency

Does your organisation believe that e-commerce will allow your organisation to improve business-to-business transactions?

- **Yes**
- **No**

The purpose of this question is to determine whether organisations can transact more efficiently and easily with other organisations, such as suppliers, using e-commerce technology as compared to 'conventional technology' such as the telephone or fax machines.

Improve Supply "Routes"

Does your organisation believe that e-commerce allows your organisation to manage its supply chain more efficiently?

- **Yes**
- **No**

The aim of this question is to ascertain whether e-commerce can provide better and faster communication between organisations and their suppliers and even customers to whom goods and services are supplied. This would include gathering information from organisations surveyed as to whether e-commerce would be a preferred method when initiating a typical business transaction, such as ordering goods and services from a supplier, through to delivering these to the customer.

3.5 Description of Research Procedures

3.5.1 Research Method

The method adopted to conduct this research was a survey conducted amongst organisations in South Africa and Botswana. The research may be described as exploratory as well as theory-testing. It is exploratory in the sense that similar research has not been conducted in South Africa or Botswana, and theory-testing because the author aims to establish whether the factors identified in the literature survey hold for organisations in both these countries. The type of research is qualitative as it provides an indication of the extent to which the enabling and inhibiting factors and relevant in the context of Botswana and South Africa. The approach adopted is appropriate for this type of research as it allowed the author to obtain and analyse data received from questionnaires.

3.5.2 Testing of the Questionnaire

Data collection involved using a mail-out questionnaire, which was pre-tested with twenty volunteer companies, ten of which were based in South Africa and the other ten in Botswana. Responses from this mail-out were analysed by the researchers to ensure that respondents easily understood the questionnaire. Once approved, the questionnaires were mailed via the post office to all organisations that were included in the sample frame. Each questionnaire was addressed to the IT Manager/Managing Director, as the research required respondents to have knowledge of IT as well as business strategy. A covering letter was also attached to each questionnaire explaining the purpose of the research. Finally, a self-addressed and self-stamped envelope was sent with the questionnaire and covering letter to enable respondents to mail their responses back to the researchers.

The researchers expected a 30% response rate from the first mail-out. If this were not

the case, a second mail-out would take place requesting recipients to respond to the questionnaire. A covering letter (along with a self-addressed, self-stamped envelope) was also sent thanking those companies that responded initially and asking them not to respond a second time. The letter requested those that did not respond to do so. Twenty questionnaires were sent out to organisations through a mail-out; ten to South African companies and ten to companies operating in Botswana. Three questionnaires were received from organisations in South Africa and two were received from companies in Botswana, indicating a response of thirty percent and twenty percent respectively. The respondents answered all the questions and did not indicate any difficulty when answering questions. The researchers were satisfied that the questionnaire was appropriate for gathering data and a second mail-out took place a few weeks later.

3.5.3 Second Mail-Out

180 questionnaires were sent out to organisations in South Africa and Botswana (90 to organisations in each country). Thus, the total mail-out was 200 including the 20 sent earlier to test the questionnaire. No changes were made to the questionnaire as the initial responses indicated that the questionnaire was well understood by respondents. A total of 49 questionnaires were received; 30 from South African companies and 19 from Botswana companies. These figures included the questionnaires received from the initial mail-out. Thus, the response rate was as follows:

South African companies:	30/100 = 30%
Botswana companies:	19/100 = 19%

The response rate from companies operating from Botswana was lower than the expected rate of 30%. Thus, a second mail-out was carried out to organisations on the mailing list for Botswana in order to obtain more responses. Each respondent was provided with a questionnaire and a covering letter. The covering letter requested companies who had not responded to do so whilst thanking those who did respond to the initial mail-out. Out of 100 questionnaires sent, 15 were received, indicating a response rate of 15%. As a result, the overall response rate from Botswana was increased to 34/100, or 34%, which was considered by the researchers to be satisfactory for statistical analysis. Thus, the final response rate was as follows:

South African companies:	30/100 = 30%
Botswana companies:	34/100 = 34%

3.5.4 Method of Analysis

The data from the questionnaires was captured and compiled using a Microsoft Excel spreadsheet. Once compiled, the data was imported into the Number Cruncher Statistical System (NCSS) 97 for statistical analysis. Data analysis was conducted using the Chi-squared test of significance for comparing discrete numerical data. The level of confidence, the probability level needed for rejection of the null hypothesis, was set at 0.05. Finally, all documentation was composed using Microsoft Word.

4. Chapter Four: Results

4.1 Introduction

This chapter of the dissertation will address the presentation of the results. The chapter portrays the results obtained from each of the three sections of the questionnaire, namely General, Factors Inhibiting the Growth of E-Commerce and Factors Enabling the Growth of E-Commerce. In each section, the question is presented, the null hypothesis is stated (where applicable), and the results depicted based on the responses. Where applicable, the null hypothesis is accepted or rejected, and an explanation of the results follows. Data analysis was conducted using the Chi-squared test of significance for comparing discrete numerical data. The level of confidence, the probability level needed for rejection of the null hypothesis, was set at 0.05.

4.2 Results

4.2.1 General Section of Questionnaire

Question 1

Please indicate your designation/position in your organisation:

- **Chief Executive Officer**
- **Managing Director**
- **Information Technology/Systems Director**
- **Information Technology/Systems Manager**
- **Chief Information Officer**
- **General Manager**

Other: .....

Chart 1 shows the breakdown of respondents by title as stated in the questionnaire:

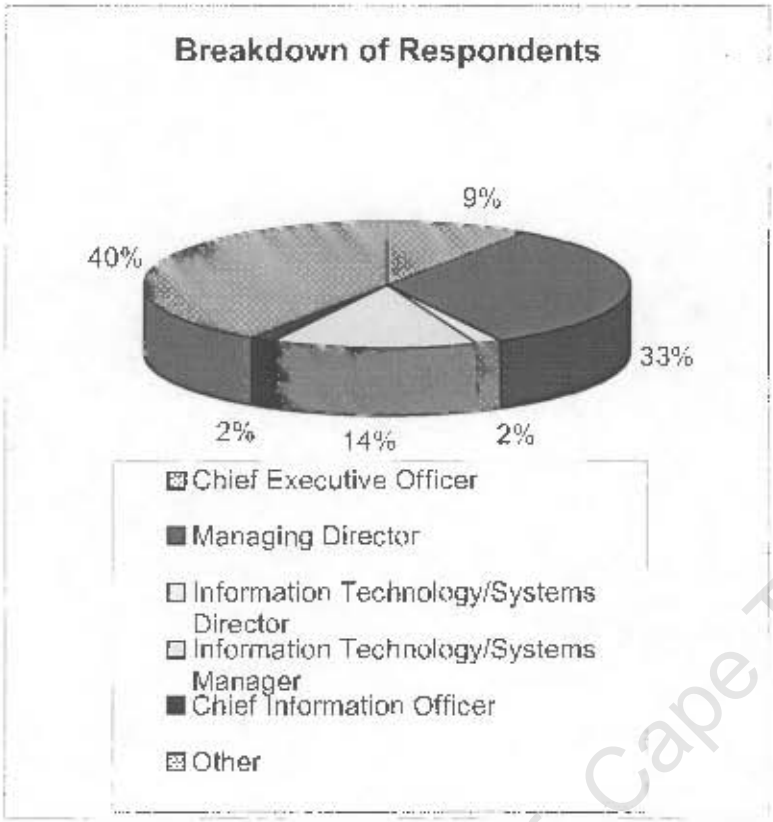

Chart 1: Breakdown of respondents by designation

From Chart 1, it is evident that the majority of respondents were managing directors (33%), followed by a grouping of respondents such as general manager, accountant, principal and the like. Out of the 64 respondents, four were not directly involved in the decision-making process of IT strategy. However, the majority of respondents (94%) were involved in this process and were therefore in a position to comment on factors relating to e-commerce in their organisation as asked for in the questionnaire.

Question 2

Is your organisation based in:

- **South Africa**
- **Botswana**

A total of 64 questionnaires were received from companies operating in Botswana and South Africa. The following table depicts the breakdown of questionnaires received per country:

Country	Number of Questionnaires Sent Out	Number of Questionnaires Received	Percentage Response
Botswana	100	34	34%
South Africa	100	30	30%
Total	**200**	**64**	

Table 2: Number of Questionnaires received per country

Question 3

Are you directly involved in the decision-making process of your organisation's Information Technology (IT) strategy?

- **Yes**
- **No**

H_0: there is no statistical significance between the samples/observations

The following table shows the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	34	32	94	
South Africa	30	28	93	0.90/
Total	64	60	94	84-98

Table 3: Respondents involved in their organisation's IT strategy decision-making process

The p-value of 0.90 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_0.

Question 4

Please indicate the type organisation you represent/work for:

- **Retail organisation**
- **Wholesale organisation**
- **Non-profit organisation**

Other: .....

Chart 2 depicts the types of organisations that responded to the questionnaire. The majority of organisations that responded were retail ones as the organisations chosen from the mailing lists were predominantly categorised as such. Organisations under "Other" included manufacturing organisations, air transportation, engineering direct

sales/manufacturer, educational institution, heavy engineering, mechanical engineering and mobile telecommunications.

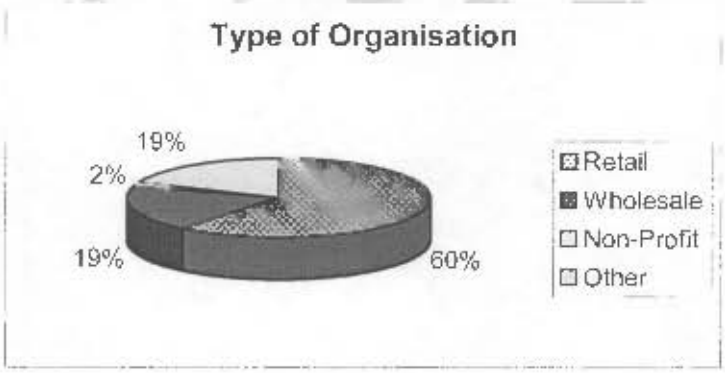

Chart 2: Breakdown of organisations that responded

Question 5a

Does your organisation carry out e-commerce activities such as sales, marketing, support, or operations on the Internet?

- ⊐ **Yes**
- □ **No**

If yes, which activity/activities is/are carried out?.....
.....
.....
.....

If no, briefly indicate why not.....
.....
.....

H_0: there is a statistical significance between the samples/observations

The following table shows the responses received from organisations that were asked whether they conducted activities such as marketing, sales and support on the Internet:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	34	4	12	0.001/ 18-41
South Africa	30	14	47	
Total	64	18	28	

Table 4: Responses regarding e-commerce activities on the Internet

The p-value of 0.001 (less than 0.05) suggests that there is, statistically, a significant difference between the responses received from Botswana and South Africa. We then can reject H_O.

The results indicate that organisations in South Africa have already started to use the Internet to conduct business activities (47% gave a positive response). In contrast to this, only 4% of the organisations surveyed in Botswana gave a positive response, indicating that a large percentage of organisations have not conducted business over the Internet. The results from South Africa are supported by the Cahners In-Stat Group survey (cited in Chief Information Officer Special Supplement, 1999), and research conducted by Balthazard and Koh (1999). Both studies found that e-commerce activities fell primarily under the aegis of marketing and also within the marketing or sales budgets. 87.8% of respondents in the latter study indicated that their Internet use was geared towards informational purposes such as providing consumers with marketing and product information. The survey also found that e-commerce was to be the primary selling channel of the organisations surveyed. The synergy between the results of the surveys is strong, and indicates that organisations

in Africa (including Botswana and South Africa) are emulating organisations in the developed world, such as the USA.

In addition to the above results, the following "Yes" responses were also obtained from organisations in Botswana:

- Some respondents indicated that they planned to implement e-commerce by the end of the year 2000.
- Some respondents indicated that their website is still being developed and will only start once the appropriate network has been put into place.
- Use Internet technology to "source products from overseas suppliers". Other respondents indicated that they are using e-commerce for "sales, marketing and support".

The following were "No" responses obtained from organisations in Botswana:

- The majority of respondents indicated the following: "No scope for e-commerce in Botswana".
- Some felt that the Internet technology, or infrastructure available, was not suitable to carry out e-commerce activities and were still considering whether to use it as part of their business strategy.
- Respondents felt that the market was not ready for e-commerce, while others stated that their current business size did not warrant adoption of e-commerce
- Some respondents indicated that there was no "local expertise" available to set up and manage an e-commerce environment.
- One respondent indicated that it was their business policy for their managing director to personally purchase goods and services from suppliers; no technology is used for this particular business process.
- One respondent stated that they would implement e-commerce if all "stakeholders" such as their suppliers and customers did likewise.

It is clear from the responses that the majority of respondents have not implemented e-commerce due to various factors mentioned above. There seems to be a general apathy towards e-commerce, and the results suggest that respondents are waiting for others to establish e-commerce before starting their own initiatives. It is worth noting that there are still a small number who have decided to initiate "e-commerce ventures", even though it may be for informational purposes only. However, the overall results obtained from question 5b indicate that the level of knowledge about the benefits e-commerce can offer is low and much needs to be done to market the concept and persuade organisations to at least develop an e-commerce strategy, which would be an appropriate starting point for them.

The following illustrate "Yes" responses obtained from organisations in South Africa:

- Most of the respondents indicated that they use e-commerce for business-to-business purchasing, internal company operations, marketing their products, processing sales and orders, Electronic Document Interchange (EDI) and electronic mail services.
- Other respondents indicated that they were still in the process of establishing websites and e-commerce functionality.
- Used as "bulletin board between franchises".
- One respondent stated that they had just completed their e-commerce strategy and are in the process of putting the technology together.

The following were "No" responses obtained from organisations in South Africa. These were varying and included the following:

- One respondent stated that government did not provide appropriate incentives for the development of e-commerce.
- Another respondent indicated that e-commerce would take income away from their sales staff, and as a result, were not keen to implement e-commerce as part of their business strategy.

- Another response was e-commerce is "…not applicable to us-we are a retail organisation".
- One respondent stated that they have not implemented e-commerce as they did not have a "distribution centre" from which to dispatch their goods and services.

The responses from the South African respondents are more encouraging than the ones obtained from Botswana. Clearly, the majority of them are using Internet technology to carry out their business activities, some at an advanced stage of usage. This indicates that organisations in South Africa have better knowledge about the benefits of e-commerce and are willing to overcome the barriers in order to use this technology. There were, however, a few organisations that offered negative responses, signifying that e-commerce has not been marketed to its fullest potential in the market place, although this seems to be declining in its importance.

Question 5b

Does your organisation have the appropriate skills to implement and maintain an e-commerce site?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	34	15	44	0.46/ 36-61
South Africa	30	16	53	
Total	64	31	48	

Table 5: Responses regarding existence of skills to implement and maintain an e-commerce site

The p-value of 0.46 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that organisations in South Africa have the necessary skills to implement and maintain an e-commerce site. However, the majority of respondents from Botswana indicated that they did not have the necessary skills. The results from Botswana are not very different from those obtained from the South African responses. This could be due to the fact that a number of organisations may, or are in the process of, training and developing staff to implement and maintain an e-commerce site. It was not possible to ascertain whether these skills are in-house or are outsourced from the responses received. However, the results show that organisations are taking e-commerce development seriously and are actively taking steps to ensure that they do acquire (at some future point) the necessary expertise to become "e-enabled".

Question 6

Does your organisation have an e-commerce strategy (please tick the appropriate option)?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	31	9	29	
South Africa	30	14	47	0.16/
Total	61	23	38	26-51

Table 6: Responses from organisations when asked whether they have an existing e-commerce strategy

The p-value of 0.16 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results show that most of the organisations surveyed in Botswana do not have an e-commerce strategy (29% of those organisations surveyed do). Similar results were obtained from South African respondents, although a higher number of firms surveyed in South Africa indicated that they did have an e-commerce strategy when

compared to the Botswana respondents. The results indicate that organisations based in Botswana are still in the process of developing an e-commerce strategy. However, the majority of those surveyed do not seem to have given e-commerce a thought. The overall positive response was under 50% indicating that most organisations either are in the process of developing an e-commerce strategy or have not done so at all. This seems to be in line with Kalin's (1999) view where he states that the development of an e-commerce strategy is one of the largest hurdles faced by organisations. A similar studies (Cahners In-Stat Group, cited in cited in Chief Information Officer Special Supplement, 1999) asked the question E-commerce: Is it an Important Business Strategy?" The results were the following: "Very Important"-19%; "Somewhat Important"-26%; "Somewhat unimportant"-16%; "Not important at all-5%"; "Neutral"-34%. These results indicate less than 50% of the respondents consider e-commerce to be an important business strategy. These are in line with the results of the survey conducted in Botswana and South Africa, indicating that organisations in these countries have not integrated e-commerce with their business strategy. Results obtained from research conducted by Balthazard and Koh (1999) also showed a similar trend, where only 44% of the respondents considered their web site to be a strategically important part of their overall business strategy.

Question 7

Do you believe that government has an adequate policy towards encouragement of e-commerce?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table illustrates responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	30	4	13	0.83/ 6-26
South Africa	26	4	15	
Total	56	8	14	

Table 7: Responses relating to government policies towards e-commerce adoption

The p-value of 0.83 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that the majority of respondents from both countries feel that government policy towards e-commerce development is unclear. This is more so in the case of the Botswana respondents. However in South Africa, government policy towards e-commerce is starting to take shape with the release of the "Green Paper on Electronic Commerce For South Africa on 20 November 2000. The paper outlines the South African government's attitude on e-commerce development, which firms may not be aware of, based on the number of negative responses. The paper does state that government is seriously looking at developing e-commerce in South Africa and is encouraging firms to consider transacting using Internet technologies.

4.2.2 Factors Inhibiting the Growth of E-Commerce

4.2.2.1 Security of Transactions

Question 8.1

Is the issue of confidentiality/privacy of transactions a barrier to e-commerce in your organisation?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following responses were received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	31	19	61	0.16/ 39-66
South Africa	28	12	43	
Total	59	31	53	

Table 8: Responses relating to confidentiality/privacy as a barrier to e-commerce development

The p-value of 0.16 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that the majority of organisations surveyed in Botswana view confidentiality/privacy as being compromised with the use of e-commerce. This is in

contrast to the South African responses where less than 50% of surveyed organisations do not see e-commerce compromising an individual's privacy. The reason for this result may be due to organisations in Botswana not having sufficient knowledge of security mechanisms that provide for confidentiality of transactions.

Question 8.2

Does your organisation feel that current law does not protect the rights of parties transacting over the Internet?

- **Yes**
- **No**

H_O: there is a statistical significance between the samples/observations

The following responses were received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	28	27	96	
South Africa	26	20	77	0.03/
Total	54	47	87	75-95

Table 9: Responses received regarding current legislation towards parties transacting over the Internet

The p-value of 0.03 (less than 0.05) suggests that there is statistically a significant difference between the responses received from Botswana and South Africa. We then can reject H_O.

The results indicate that the majority of organisations surveyed in Botswana feel that current legislation does not protect parties transacting over the Internet, a view shared to a lesser degree by the South African respondents. Reasons for this response may include lack of communication between government and the business sector, especially in Botswana where there are no clear guidelines on e-commerce law. This is not strictly the case in South Africa as government is actively formulating guidelines of e-commerce development with the release of the "Green Paper on Electronic Commerce for South Africa" (Matsepe-Casaburri, 2000). Although the paper does state that e-commerce is not taking place within a "legal vacuum", the Department of Communications has commissioned an audit of existing South African law which aims to identify legal barriers to e-commerce and suggest options to eliminate such barriers.

Clearly there is a need for countries such as South Africa and Botswana to form an e-commerce legal framework which organisations can relate to, thus eliminating any legal uncertainty associated with electronic transactions. Other factors that can help to ensure transaction security include authentication (securing the identities of the parties to a transaction), and making certain that neither party can refute that the transaction, ensuring that the transaction is binding, otherwise known as non-repudiation (Matsepe-Casaburri, 2000).

Question 8.3

Does your organisation feel that there is significant potential for users to gain access to information such as credit card numbers by using false identification?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table shows the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	29	91	0.31/ 75-94
South Africa	27	22	81	
Total	59	51	86	

Table 10: Responses relating to gain credit card information under false pretences

The p-value of 0.31 (greater than 0.05) suggests that there is statistically no significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that the majority of organisations surveyed in Botswana feel that there is a strong potential for fraud to occur over the Internet, thus compromising security of transactions. This view is also held by South African companies to a lesser extent possibly because of greater exposure and acceptance of the emerging e-commerce environment and associated developments in security technologies. These findings are consistent with those of Mort (2000), Morell and Brown (1999), and Rizzo (1999), who state that organisations in countries such as the United Kingdom

and Ireland see the high potential of fraud by "hackers" as real possibilities. A solution to this would be the use of digital certificates that serve to link and validate mechanisms used in electronic transactions. Organisations need to be aware of these and utilise their facilities effectively.

Question 8.4

Does your organisation feel that current methods of cryptography and authentication of financial information are inhibiting growth of e-commerce?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	28	16	57	
South Africa	25	13	52	0.71/
Total	53	29	55	40-68

Table 11:Responses relating to the issue of whether current financial authentication methods inhibit e-commerce adoption

The p-value of 0.71 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that respondents from both countries feel that current methods of cryptography are inhibiting e-commerce growth, and this is more the case from the Botswana respondents. However, the results do indicate that a substantial number of respondents feel that current methods such as SSL and SHTTP (Stallings and van Slyke, 1998) do seem to work (indicated by the almost equal negative responses to the question) and thus, decrease the potential of security breaches. There seems to be a shift from a negative view of security to a more positive one, indicating that security may not be that large an issue as was the case.

The results obtained from respondents regarding security of transactions are similar to those obtained from a survey conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999). The results showed that improving security of transactions was crucial for e-commerce to succeed, indicated by 28% (the majority) of the respondents. We can conclude that even though more efficient security mechanisms are being developed to improve on-line transactions, organisations still see this as being one of the main impediments to e-commerce development. However, research conducted by Balthazard and Koh (1999) showed that security becomes more of an issue if organisations use the Internet as a transactional tool as opposed to a marketing or advertising tool. This finding may explain the number of negative responses received from the results obtained in this study.

4.2.2.2 Lack of appropriate infrastructure and bandwidth problems

Question 9.1

Does your organisation lack the infrastructure to implement e-commerce?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table portrays the responses received from organisations:

Country	Number of Responses	Number of Positive Responses Received	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	16	50	0.11/ 28-54
South Africa	30	9	30	
Total	52	25	40	

Table 12: Responses relating to the lack of infrastructure necessary to implement e-commerce

The p-value of 0.11 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that just fewer than 50% of organisations surveyed in Botswana and South Africa lack the necessary infrastructure required to implement an e-commerce environment. About 60% of the organisations surveyed have indicated that they possess, or are in the process of, implementing infrastructure necessary for e-commerce. This seems to be contrary to the views of Corboy (1999) and Bowen (2000) who state that Africa is one of the continents that is far behind in terms of infrastructure development as compared to continents such as North America and Europe. Jensen (a) (1999) states that Botswana and South Africa are leading the way in terms of telecommunication infrastructure development in Africa which may further explain the higher than expected negative response rate. Jensen (a) (1999) further states that Botswana and South Africa have higher levels of digital lines

compared to countries such as the USA, which may also contribute to the above results.

Question 9.2

Does your organisation feel that slow connection problems are inhibiting e-commerce implementation?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table indicates responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	30	19	63	
South Africa	28	23	82	0.11/
Total	58	42	72	59-83

Table 13: Responses relating to the issue of slow connections inhibiting e-commerce implementation

The p-value of 0.11 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The above results show that bandwidth seems to be a factor that is inhibiting e-commerce growth, more so in South Africa where the response rate was higher than

that of Botswana. This may be because South African firms have had more exposure and therefore more feedback from customers regarding problems arising from slow connections. It is also, however, evident from the results that organisations surveyed in Botswana feel that bandwidth problems are prevalent even though the response rate was not as high as that of South African firms. Organisations in Botswana are becoming more aware of the current bandwidth limitations and some have started to investigate other forms of networking technology to deliver Internet content. These include the use of satellite and microwave technology for information delivery.

Question 9.3

Does your organisation feel that telecommunication and networking facilities currently being used in South Africa/Botswana are inadequate to support e-commerce?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	29	16	55	0.48/ 46-72
South Africa	28	18	64	
Total	57	34	60	

Table 14: Responses relating to the inadequacy of current networking and communication facilities

The p-value of 0.48 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

Both sets of respondents felt that present telecommunication facilities are inadequate to support e-commerce. This finding was more prevalent amongst the South African respondents who would have had more exposure to the e-commerce environment. The findings seem to be in line with current literature (Jensen (a), 1999), which states that bandwidth performance and availability need to be improved. On average, about six dialup users must share each 1 Kilobit per second (Kbps) of international bandwidth, making for slow connections to remote sites (Jensen (a), 1999). In addition to this, bandwidth cost needs to be reduced in order for organisations to take advantage of e-commerce (Rizzo, 1999; Ernst, 2000). Research conducted by Nath (2000) showed that one in three Americans use the Internet, whereas only one in 10000 people in developing countries such as India, Bangladesh and Pakistan do. The majority of Internet users reside in the USA (50%) compared to 12-13% in Asia. This finding along with the fact that low teledensity (1.5% in a developing country such as India) and narrow bandwidth contribute to the low use of the Internet in developing countries (Nath, 2000). These findings support the results of this survey, indicating that telecommunication and networking facilities, especially bandwidth problems, are hampering e-commerce development.

4.2.2.3 Cost of Investment

Question 10.1

Does your organisation have the capital and financial resources to implement an e-commerce site?

- ☐ **Yes**
- ☐ **No**

H_O: there is no statistical significance between the samples/observations

The following responses were received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	28	88	
South Africa	30	29	97	0.19/
Total	62	57	92	82-97

Table 15: Responses regarding the availability of capital and financial resources necessary for e-commerce implementation

The p-value of 0.19 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results obtained are encouraging as most of the organisations that responded in the survey have the capital and financial resources to set up an e-commerce site. The initial capital outlay to set up e-commerce infrastructure may account for as much as 50% of the total infrastructure cost (Bowen, 2000). A survey conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999) showed found that the mean investment on Internet commerce was US$ 199,999 (approximately one and a half million Rands). Of this amount, software and hardware account for more than half the investment figure, while the rest accounts for consulting fees. Although this figure may not be applicable to the investment required in developing countries, the responses indicate that despite the cost of

investment, organisations still have the financial means to implement e-commerce, indicating that cost of investment may be declining in its role as an inhibiting factor.

4.2.2.4 Taxation

Question 11.1

Does your organisation feel that current tax legislation inhibits the implementation of e-commerce?

- **Yes**
- **No**

H_O: there is a statistical significance between the samples/observations

The following table indicates the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	25	3	12	0.005/ 18-45
South Africa	25	12	48	
Total	50	15	30	

Table 16: Responses relating to current tax legislation as an inhibitor of e-commerce implementation

The p-value of 0.005 (less than 0.05) suggests that there is a statistically significant difference between the responses received from Botswana and South Africa. We then can reject H_O.

The above results indicate that a small percentage of respondents from Botswana agreed that current tax legislation was an inhibitor of e-commerce development. The remaining respondents either disagreed or did not respond at all which could indicate a lack of awareness about laws relating to e-commerce. This result is consistent with those obtained in Question 7. The same may be said for South African respondents, although the majority of respondents seem to have knowledge of current legislation relating to e-commerce and seem to feel that government are taking a positive step towards e-commerce development. Discussion papers (Matsepe-Casaburri, 1999; Matsepe-Casaburri, 2000) released by the South African government stating their commitment to promoting e-commerce and not indicating any radical changes to legislation governing may support the responses from South Africa. One can also note the number of blank responses (nine and five from Botswana and South Africa respectively), which could imply that some of the organisations may not have any knowledge of the relationship between taxation and e-commerce. International organisations such as the Organisation for Economic Cooperation and Development (OECD), the US government and the World Trade Organisation (WTO) have highlighted principles that should guide the work of governments in the field of taxation of electronic commerce (Matsepe-Casaburri, 2000). These may or may not form part of tax legislation in South Africa, an issue still under consideration by the Department of Communications.

Question 11.2

Would separate taxation on e-commerce transactions dissuade your organisation from implementing e-commerce in your organisation?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table shows responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	28	9	32	
South Africa	24	10	42	0.48/
Total	52	19	37	24-51

Table 17: Responses relating to separate taxation as an inhibitor of e-commerce implementation

The p-value of 0.48 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The above results show that respondents from both countries are not concerned with whether e-commerce transactions will be subjected to separate taxation. Indeed a fair number did not respond to this question, once again indicative of the lack of knowledge in this area. However, the majority of respondents do not seem to be concerned with legislation relating to e-commerce transactions, even though the literature indicates that e-commerce may be subjected to tax laws that are different to present ones that govern non-Internet based transactions (Lunsche, 1999; Cogburn cited in Bowen, 2000).

4.2.2.5 Site Visibility

Question 12.1

Do you believe that poor web site design is a major inhibiting factor of e-commerce transactions?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table shows the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	21	66	
South Africa	29	18	62	0.77/
Total	61	39	64	51-76

Table 18: Responses relating to site visibility on e-commerce transactions

The p-value of 0.77 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that most of the respondents feel that poor web site design does contribute to a decline in e-commerce usage. This is consistent with Gordon (1999), Doscher (1998) and Ernst (2000) whose research states that visually appealing and easy-to-navigate sites are essential ingredients for successful e-commerce

development. A study conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999) also found that 7% of respondents indicated that poor website visibility impeded e-commerce success. This was ranked as the fourth most important factor that contributed to e-commerce failure.

4.2.3 Factors Enabling the Growth of E-Commerce

4.2.3.1 Revenue Enhancement

Question 13.1

Does your organisation believe that e-commerce provides a significant way of increasing sales revenues?

- **Yes**
- **No**

H_O: there is a statistical significance between the samples/observations

The following table depicts the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	28	88	
South Africa	30	20	67	0.049/
Total	62	48	77	65-87

Table 19: Responses relating to e-commerce as a way of increasing sales revenues

The p-value of 0.049 (less than 0.05) suggests that there is a statistically significant difference between the responses received from Botswana and South Africa. We then can reject H_O.

The results show that the majority of respondents agree that e-commerce can contribute to increased sales revenues. The positive response figure is higher in the case of the Botswana respondents as they anticipate an increase in sales revenue but may have not experienced it. The positive response is lower from South African companies as some may have not experienced a significant increase in sales revenues. However, the results are consistent with the literature in this area (McWilliams, 1997; Acuity Media Africa, 1999). Furthermore, research conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999) showed that in addition to revenue enhancement, 26% of the organisations surveyed reported a positive Return On Investment (ROI). This indicates that organisations in developing countries can also achieve a favourable ROI if they use e-commerce correctly and market themselves extensively. Another study conducted by the Cahners In-Stat Group (cited in Chief Information Officer Special Supplement, 1999) showed that over 50% of the respondents indicated that at least 31% of corporate sales will be conducted over the Internet by the end of the year 2000, once again consistent with the results of the survey conducted in Botswana and South Africa.

Question 13.2

Does your organisation believe that e-commerce provides new sales channels and new markets?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table shows the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	29	91	
South Africa	30	30	100	0.09/
Total	62	59	95	86-99

Table 20: Responses relating to e-commerce providing new sales channels and markets

The p-value of 0.09 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that almost 100% of the respondents see e-commerce as a concrete means of increasing their marketability and hence sales. All respondents from South Africa indicated this possibly showing their confidence in e-commerce as a means to expand their operations. A small proportion of respondents from Botswana did not either agree with this or did not respond to the question. This could indicate that there are still organisations who might not see the need for e-commerce. However, these findings are consistent with research conducted by Acuity Media Africa (1999), which found, for example, that sales from e-commerce increased from R500 million in 1998 to R1.2 billion in 1999, indicating that e-commerce does increase an organisation's marketability and consequently, its sales figures.

4.2.3.2 Customer Resource Management

Question 14.1

Does your organisation believe that e-commerce will assist in improving customer service?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	26	81	0.90/ 69-90
South Africa	30	24	80	
Total	62	50	81	

Table 21: Responses on whether e-commerce improves customer service

The p-value of 0.90 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

Both sets of respondents felt that customer service can be enhanced through e-commerce. A small proportion of Botswana respondents did not respond to the question. This might indicate the lack of knowledge on the subject, which does not

seem to be surprising, as e-commerce has not taken front stage in Botswana compared to the extent that it has in South Africa. However, these findings are consistent with research conducted by Strassel (1998), Corboy (1999) and Seegers (1999) and who state that e-commerce provides more product information to the customer and allows flexibility of shopping by creating more of a personal touch to transactions even though these occur through a web interface.

Question 14.2

Does your organisation believe that e-commerce provides customers with comprehensive and up-to-date information on products, thus allowing them to make useful buying decisions without asking for assistance from your organisation directly?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table portrays the responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	27	84	
South Africa	30	25	83	0.91/
Total	62	52	84	72-92

Table 22: Responses relating to e-commerce as a source of accurate and up-to-date information for customers

The p-value of 0.91 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The above results indicate that the majority of respondents favour e-commerce as a means of providing customers with accurate product information. A small percentage do not think so, which might indicate that they still prefer direct interaction with customers. However, these findings are consistent with those of Rossini (1999), Figueiredo (1999) and Fingar et al (2000), who advocate that product information on the Internet is generally more accurate and allows merchants to analyse customer buying patterns thus allowing personalised service based on buying history and preferences.

Question 14.3

Does your organisation feel that e-commerce provides customers with flexibility in terms of shopping at their own convenience?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table shows responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	29	91	
South Africa	30	27	90	0.93/
Total	62	56	90	80-96

Table 23: Responses regarding flexibility of shopping through e-commerce

The p-value of 0.93 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that respondents see e-commerce as a means of providing flexibility of shopping. This is consistent with the findings of Weil (1999) who stated that there are an increasing number of people who prefer online shopping rather than shopping in "crowded malls". However, a few respondents felt that traditional methods of shopping would suffice and thus do not see e-commerce as a way of providing flexibility to customers.

Question 14.4

Does your organisation believe that e-commerce will provide customers with more detailed product information, thus enabling more intelligent buying decisions?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	25	78	
South Africa	30	25	83	0.60/
Total	62	50	81	69-90

Table 24: Responses relating to e-commerce as an enabler of intelligent buying decisions

The p-value of 0.60 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that most of the organisations surveyed felt that e-commerce does allow for more intelligent buying decisions as web sites provide potential customers with detailed information. However, a fair amount of respondents did not agree with this, especially those from Botswana. This suggests that traditional methods of customer service such as face-to-face contact are preferred methods of providing customers with information that influence buying decisions.

The overall results are, nonetheless, consistent with those obtained from research conducted by Balthazard and Koh (1999), where 47% of the respondents indicated that Internet usage was geared towards providing transactional service to customers. This included the providence of direct sales to customers, improving customer service and displaying customer suggestions (46.3%, 43.9% and 43.9% respectively). Even though these responses are lower than those obtained from respondents in Botswana

and South Africa, they were still ranked as the highest factors of Internet usage in their category. This implies that customer resource management is an important enabler of e-commerce both in developing countries and those in developed countries such as the USA.

4.2.3.3 Cost Reduction

Question 15.1

Does your organisation believe that e-commerce can significantly reduce selling costs incurred by the organisation when marketing their products?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	31	21	68	
South Africa	30	18	60	0.53/
Total	61	39	64	51-76

Table 25: Responses relating to e-commerce as means to reduce selling costs

The p-value of 0.53 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

Respondents on the whole agreed that e-commerce is a way of reducing marketing costs, as advertising conducted on the web site is cheaper than conventional methods. Customers would be able to view information on based on their preferences through a login assigned to them. This would save organisations on telephonic and other related advertising costs, ultimately providing customers with lower prices. Some respondents did feel that e-commerce was not a means of reducing selling costs indicating that they might prefer using traditional methods to reduce these costs, as indicated by the number of negative responses. However, the number of positive results obtained are consistent with those found by Morell and Brown (1999), whose research showed that electronic commerce allowed trading partners to exchange product data in digital form thereby reducing production times and reducing the overall cost of manufacturing. This finding was derived from research conducted in five manufacturing companies, and showed that electronic commerce can reduce the cost per transaction by as much as 75% (Morell and Brown, 1999). Their research also found that manufacturing organisations used electronic commerce to find suppliers, market their products, manage order receipts, and most importantly allow the exchange of product data. Thus, the findings of this survey support the results obtained from the literature.

4.2.3.4 Process Efficiency

Question 16.1

Does your organisation believe that e-commerce will allow your organisation to improve business-to-business transactions?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	27	84	
South Africa	28	26	93	0.31/
Total	60	53	88	77-95

Table 26: Responses showing whether e-commerce improves business-to-business transactions

The p-value of 0.31 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that e-commerce is favoured as a method of improving business-to-business transactions, more so in the case of South Africa based on the 93% positive response figure. This may be due to the experience of South African business in this area and favourable results which they may have experienced as a result of transacting online. Likewise, the majority of respondents from Botswana felt that this is a potential area that has merit. The responses received could be based on either direct experience or intuition, as it was unclear from the responses received.

4.2.3.5 Improve Supply Routes

Question 17.1

Does your organisation believe that e-commerce allows your organisation to manage its supply chain more efficiently?

- **Yes**
- **No**

H_O: there is no statistical significance between the samples/observations

The following table depicts responses received:

Country	Number of Responses	Number of Positive Responses	Percentage Positive Responses	p-value/95% confidence interval
Botswana	32	28	88	
South Africa	27	22	81	0.52/
Total	59	50	85	75-93

Table 27: Responses relating to whether e-commerce improves supply chain management

The p-value of 0.52 (greater than 0.05) suggests that there is no statistically significant difference between the responses received from Botswana and South Africa. We then can accept H_O.

The results indicate that e-commerce is seen to be a way in which supply routes can be improved. The positive response from Botswana is higher than that of South Africa, indicating that organisations in South Africa are perhaps not entirely satisfied

with current methods of supply chain management, although they perceive e-commerce to be an acceptable and viable alternative. On the other hand, the positive response rate from the South African companies is slightly lower than those received from Botswana, possibly indicating that through experience, e-commerce may not be the best way of improving supply chain management. However, both sets of results are coherent with research by Seegers (1999) and De Figueiredo (1999) who state that analysing online buying patterns of customers helps to implement more efficient purchase methods with suppliers. The above results are also consistent with those of the Cahners In-Stat Group survey (cited in Chief Information Officer Special Supplement, 1999), which showed that 63% of respondents use the Internet to interact with suppliers, rather than using Electronic Document Interchange (EDI) for purchasing and selling.

5 Chapter Five: Summary of Findings

5.1 Review of the Purpose and Objective of the Study

E-commerce is an area of business that is gaining acceptance, especially in developed countries. Two sets of factors primarily drive the adoption of e-commerce: enabling factors and inhibiting ones. A greater emphasis on the enabling factors should encourage an organisation into adopting e-commerce. The purpose of the study was to examine whether the factors that enable and inhibit e-commerce adoption and development in developed countries, are also applicable in developing countries, more specifically for Botswana and South Africa. The specific objectives of the study were as follows:

1 To demonstrate that the factors that enable and inhibit e-commerce adoption are applicable to organisations in developing countries.
2 To highlight any significant differences between the responses received form organisations in Botswana to those received from South Africa.
3 To explain any differences between the results of research conducted in developed countries to those found in this study.
4 To provide an insight into issues organisations in developing countries may face when wanting to implement e-commerce, or further develop existing e-commerce sites.

The study was important for the following reasons. Firstly, it demonstrated whether the enabling and inhibiting factors of e-commerce development identified in the literature applied to organisations in developing countries. Secondly, organisations in developing countries who wish to adopt an e-commerce approach as part of their business strategy would be able to use this study as a guideline when considering

what factors should be taken into account when either improving, or establishing an e-commerce strategy.

The above-mentioned research was also aimed at providing a clear understanding of the state of e-commerce awareness and development in developing countries, using research samples from South Africa and Botswana. The results would also provide insight into issues organisations may face when wanting to implement e-commerce, or further develop existing e-commerce sites.

5.2 Review of the Supporting Literature

E-commerce is an emerging area and has provided organisations with new methods by way of technology to conducting business transactions. This is predominant in countries that have advanced telecommunication facilities. The adoption of e-commerce is also dependent on creating an e-commerce strategy and amalgamating this with the business strategy, thus ensuring proper use and adoption of technology to successfully facilitate business transactions, thereby gaining the rewards provided by e-commerce. The analysis of the literature relative to the purpose of the study revealed various factors that enabled e-commerce adoption. Further examination of studies in this area also exposed factors that inhibited e-commerce growth.

Examination of the literature showed that issues such as security of transactions, lack of appropriate infrastructure and bandwidth, cost of investment, taxation issues and poor site visibility contributed significantly towards the non-adoption of e-commerce. These issues were more prevalent in developing countries along with the lack of basic computer literacy and technological empowerment regarded as being important factors that form the basis for use of technology. This indicated that if the majority of the customer base did not possess basic computer knowledge, organisations would be reluctant to implement ways of conducting business that relied a great deal on interaction through technology usage. The literature also suggested that the process of

globalisation was gaining rapid ground and required, amongst other things, the use of technology in order to be successful.

Conversely, the literature also highlighted factors that contributed to the development of e-commerce. The important ones included revenue and sales channel enhancement, improvement of customer resource management, and reducing the costs of transactions. Other significant enablers of e-commerce also included improving business process efficiency and the enhancement of supply chain management. Finally, the economic and social impacts of e-commerce were highlighted, indicating that technology usage can promote globalisation and thus the economy of a developing country. However, e-commerce can lead to a change in the method of doing business, forcing individuals to adapt to a new way of transacting as well as removing the essence of the "personal touch" associated with buying goods and services.

Economies in Africa are changing rapidly and need to keep up with the pace of globalisation. As e-commerce is one of the main components of globalisation, it is important to ascertain what factors enable as well as impede its adoption in developing countries. While they have been studies conducted in developed countries, there is a definite lack of this in developing countries, especially in Botswana where e-commerce knowledge and development is certainly not on par with that of South Africa (and the rest of the world). This study has hopefully assisted in providing information on whether factors ascertained from developed countries apply to developing countries such as Botswana and South Africa.

5.3 Review of the Methods and Procedures

The null-hypothesis posed for testing in the study has been listed below.

"There is no significant difference at the 0.05 level of confidence between the responses received from organisations in Botswana and those collected amongst organisations in South Africa on factors that inhibit and enable e-commerce development".

The 200 organisations (100 from South Africa and 100 from Botswana) who were selected randomly to participate in the study, were each given the research instrument, which consisted of an author-developed questionnaire. The research subjects were selected from two databases, one from IRG (South Africa) and the other obtained from the CSO (Botswana). The questionnaire was pre-tested by way of an initial mail-out to 20 (ten from Botswana and ten from South Africa) randomly selected organisations. Responses received from these organisations did not warrant any changes to the questionnaire.

The questionnaire contained three main sections. The first section, entitled "General", contained seven questions that were designed to obtain information about the type of organisation the respondent worked for, their designation and information on the current state of e-commerce in their organisation. All questions allowed respondents to select an option with the exception of two questions. These expected respondents to write in their opinions (see questions 5a and 5b in the questionnaire). The second section, entitled "Factors Inhibiting Growth of E-Commerce", contained 11 questions, and was aimed at obtaining respondents' views on factors that were seen to be inhibiting e-commerce growth. The third and final section, entitled "Factors Enabling the Growth of E-Commerce", contained nine questions, and was used to obtain respondents' views on factors that were seen as enablers of e-commerce. All questions from sections two and three expected respondents to either tick a "Yes" or "No" response. This allowed respondents to go through the questionnaire relatively

quickly while still providing the researchers with valuable feedback. Any question with no response (i.e. no tick had been placed as an answer) was treated as an "I don't know" response.

200 questionnaires in total were mailed to respondents. The initial response rate was 19% and 30% for Botswana and South Africa respectively. A second mail-out to the list of organisations in Botswana was carried out as the initial response rate was considered to be low. An additional 15 questionnaires were received as a result of the second mail-out in Botswana. This yielded a final response rate of 34%, which the researchers found to be satisfactory for analysis.

The data from the questionnaires was captured and compiled using a Microsoft Excel spreadsheet. Once compiled, the data was imported into a statistical application for examination. Data analysis was conducted using the Chi-squared test of significance for comparing discrete numerical data. The level of confidence, the probability level needed for rejection of the null hypothesis, was set at 0.05. Finally, all documentation was composed using Microsoft Word.

5.4 Summary of Important Findings

The analysis of the data collected relative to the objectives of the study indicated a close synergy with the findings of similar studies conducted in developed countries. The following are some of the important findings of the study:

5.4.1 Factors Inhibiting the Growth of E-commerce

- Organisations (from Botswana and South Africa) were asked to indicate whether they felt that the following factors impeded e-commerce growth: security, lack of appropriate infrastructure and bandwidth, high cost of investment, taxation and site visibility. The responses received showed that

these were areas that, if not improved, will impede e-commerce growth. Both sets of respondents felt strongly about this, more so in Botswana as e-commerce has not been adopted to the extent it has in South Africa. These findings are in line with the first objective of this research paper.

- The number of responses relating to issues of taxation and law concerning online transactions was relatively low compared to those received in other areas. The results point out that organisations do not have sufficient knowledge of these, especially those in Botswana. These are in line with the fourth objective of this research paper.
- Generally, they were no significant differences between the responses from organisations in both countries. However, there were significant differences noted in the following areas: the use of e-commerce for marketing and sales (question 5a), the law relating to rights of parties transacting over the Internet (question 8.2), and current tax laws relating to e-commerce transactions (question 11.1). Responses received from Botswana were considerably lower than those obtained from South African organisations. This indicates that South African organisations have more knowledge in these areas when compared to their Botswana counterparts. Organisations in Botswana have not had much exposure to issues surrounding e-commerce, especially in the area of law relating to online transacting. These findings support the second and third objectives of this research paper.
- Finally, the results also suggest that even amongst developing countries, there are differences in the levels of knowledge regarding factors that impede e-commerce development. This indicates that much needs to be done to improve the state of e-commerce awareness in order to bring organisations in developing countries on par with those in developed countries.

5.4.2 Factors Enabling the Growth of E-commerce

- Organisations (from Botswana and South Africa) were asked to indicate whether they felt that the following factors enabled e-commerce growth: revenue enhancement, customer resource management, cost reduction, process efficiency and the improvement of supply routes. The responses received from organisations in both countries showed that these were indeed areas that would drive e-commerce development, indicating a close synergy with studies mentioned in the literature. These findings are in line with the first objective of this research paper.
- While most of the positive responses to questions were high (over 80%), there was a relatively low one in the area of e-commerce reducing selling costs (question 15.1). This may be an indication that a sizable number of these organisations, through experience, have not experienced significant reductions in selling costs as may have been anticipated. These findings support the second and third objectives of this research paper.
- Generally, they were no significant differences between the responses from organisations in both countries. However, there was one significant difference observed, relating to whether e-commerce provides a means of increasing sales revenues (question 13.1). A notably lower number of respondents from South Africa gave positive responses to this question compared to those who responded from Botswana. This indicates that organisations in South Africa have had more exposure to sales from e-commerce and may not have experienced results that they had anticipated. These objectives are also in line with the second and third objectives of this research paper.
- Finally, the results also suggest that even amongst developing countries, there are differences in the levels of knowledge about factors that enable e-commerce development. This implies that much needs to be done to improve the state of e-commerce awareness in order to bring organisations in developing countries on par with those in developed countries. This is in line with the fourth objective of this research paper.

5.4.3 General

Responses from organisations in Botswana and South Africa, as indicated by responses received in the "General" section of the questionnaire, show that e-commerce has not been developed to the extent as it has in developed countries such as the USA. Organisations, especially those in Botswana do not see the need for e-commerce as yet. They cite various reasons for this, including the lack of an appropriate market that justifies e-commerce embracement. This also explains the high number of responses received from organisations that do not have an e-commerce strategy, especially those in Botswana. Finally, the results also indicate that government is not playing an active role in e-commerce development, dissuading organisations from actively pursuing e-commerce. This has changed in South Africa with the release of Discussion Papers, by the South African government, addressing the issues surrounding e-commerce development. However, there is no known initiative from the Botswana government, which explains why a low number of organisations from Botswana provided a positive response to questions addressing this issue. The findings here support the third and fourth objectives of this research paper.

5.5 Discussion and Implications of the Study

There are a number of findings that can be derived from the study, which may have practical importance for organisations wanting to develop e-commerce. The analysis of the data collected relative to the principal objectives of the study has indicated that the level of knowledge about factors that enable and inhibit e-commerce growth in developing countries is inferior to that of organisations situated in developed countries.

However, the results of the research do indicate that e-commerce is not an entirely new concept amongst organisations in developing countries. Still, much needs to be

done to improve this knowledge, thereby allowing organisations to develop and establish e-commerce business practices that are on par with those found in developed countries. For example, more effort is required from entities such as government departments, to promote and manage e-commerce at national level. Areas that require attention include clear policies on taxation of online transactions, promoting basic computer literacy at primary, secondary and tertiary education levels, with an emphasis on Internet topics, and managing some of the social impacts that would result from conducting business using e-commerce technology.

At an organisational level, strategic decision makers need to conduct meaningful research to determine how best to apply e-commerce methodologies and associated technologies to improve their marketability, both at a local and international level. Organisations should consider sending representatives to international symposiums on e-commerce in order to acquire information that will enable them to apply skills to the market in which they operate. Organisations should also consider providing funding to educational institutions that offer courses on Internet and e-commerce usage. This would hopefully result in creating a population that is pro-Internet and e-commerce, reducing the fears and anxieties that may impede e-commerce growth in the future.

In addition to the above, organisations need to investigate ways and means of overcoming the barriers to e-commerce growth, as stipulated in this study. Consideration should be given to technologies such as Secure Electronic Transacting (SET), which provide for secure online transacting, and how best to implement these technologies. Organisations should meet with key role players in their market, such as their suppliers and consumers, and decide on pilot projects that will help overcome these obstacles to e-commerce development. In contrast to this, organisations can use pilot projects to demonstrate that the factors that enable e-commerce growth are indeed so, and provide better customer management while also increasing revenue and ultimately, returns on investment.

5.6 Suggestions for Future Research

One suggestion for future research might deal with establishing whether transacting using e-commerce does indeed increase the amount of revenue a firm earns when compared to revenue earned through traditional means. A suggested methodology for researching this would be to establish an e-commerce site in an organisation and allow sales transactions solely through this site for a specified period. The organisation can then revert to the original method of selling its goods and services during the same period. The revenue earned from each method can be compared to see which method provided the higher revenue. The results from this study would provide evidence regarding the feasibility of e-commerce as a revenue enhancer over traditional methods of earning revenue.

The study highlighted that organisations have insufficient knowledge of government policies on e-commerce. This includes insufficient information regarding the tax laws applicable to e-commerce. As a result of this, another prospective research area could be determining the effect of favourable tax legislation on the growth of e-commerce. A recommended method to explore this area would be to perform a survey amongst organisations asking them to indicate whether favourable legislation would encourage them to migrate from traditional methods of doing business to one that is centred on e-commerce. Favourable results would be an incentive for governments, especially that of Botswana, to consider evaluating and implementing a framework that addresses e-commerce growth and removes barriers to its implementation.

A third suggestion for future research could be to determine the critical failure factors that would discourage e-commerce development in developing countries. The study would be similar to the one conducted by Han and Noh (2000), conducted amongst 234 organisations in the USA. The use of the questionnaire used in Han and Noh's study (2000) would be sufficient to obtain the data required. The research would assist in establishing whether there is a similarity of views between organisations in developed countries to those in developing countries.

Finally, a further suggestion for future research could be to extend the research conducted for this paper to Africa and other developing countries of the world. The method of research would be the same as described in this paper. The research would be useful when analysing and comparing results both in Africa as a whole, and with other developing regions around the world.

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Appendix A - Questionnaire

Trading Name of Organisation.....

General

1. **Please indicate your designation/position in your organisation:**

   - ☐ Chief Executive Officer
   - ☐ Managing Director
   - ☐ Information Technology/Systems Director
   - ☐ Information Technology/Systems Manager
   - ☐ Chief Information Officer
   - ☐ General Manager

   Other: .....

2. **Is your organisation based in:**

   - ☐ South Africa
   - ☐ Botswana

3. **Are you directly involved in the decision-making process of your organisation's Information Technology (IT) strategy?**

   - ☐ Yes
   - ☐ No

4. **Please indicate the type organisation you represent/work for:**

   - ☐ Retail organisation
   - ☐ Wholesale organisation
   - ☐ Non-profit organisation

   Other: .....

5. **a) Does your organisation carry out e-commerce activities such as sales, marketing, support, or operations on the Internet?**

   - ☐ Yes
   - ☐ No

   If yes, which activity/activities is/are carried out? .....
   .....
   .....
   .....

   If no, briefly indicate why not .....
   .....
   .....
   .....

   b) Does your organisation have the appropriate skills to implement and maintain an e-commerce site?

   - ☐ Yes
   - ☐ No

6. **Does your organisation have an e-commerce strategy (please tick the appropriate option)?**

   - ☐ Yes
   - ☐ No

7. **Do you believe that government has an adequate policy towards encouragement of e-commerce?**

   - ☐ Yes
   - ☐ No

Factors Inhibiting the Growth of E-Commerce

8. Security of Transactions

8.1 Is the issue of confidentiality/privacy of transactions a barrier to e-commerce in your organisation?

- ❑ Yes
- ❑ No

8.2 Does your organisation feel that current law does not protect the rights of parties transacting over the Internet?

- ❑ Yes
- ❑ No

8.3 Does your organisation feel that there is significant potential for users to gain access to information such as credit card numbers by using false identification?

- ❑ Yes
- ❑ No

8.4 Does your organisation feel that current methods of cryptography and authentication of financial information are inhibiting growth of e-commerce?

- ❑ Yes
- ❑ No

9. Lack of appropriate infrastructure and bandwidth problems

9.1 Does your organisation lack the infrastructure to implement e-commerce?

- ❑ Yes
- ❑ No

9.2 Does your organisation feel that slow connection problems are inhibiting e-commerce implementation?

- ❑ Yes
- ❑ No

9.3 Does your organisation feel that telecommunication and networking facilities currently being used in South Africa/Botswana are inadequate to support e-commerce?

- ❑ Yes
- ❑ No

10. Cost of Investment

10.1 Does your organisation have the capital and financial resources to implement an e-commerce site?

- ❑ Yes
- ❑ No

11. Taxation

11.1 Does your organisation feel that current tax legislation inhibits the implementation of e-commerce?

- ❑ Yes
- ❑ No

11.2 Would separate taxation on e-commerce transactions dissuade your organisation from implementing e-commerce in your organisation?

- ❑ Yes
- ❑ No

12. Site Visibility

12.1 Do you believe that poor web site design is a major inhibiting factor of e-commerce transactions?

- ❑ Yes
- ❑ No

Factors Enabling the Growth of E-Commerce

13. Revenue Enhancement

13.1 Does your organisation believe that e-commerce provides a significant way of increasing sales revenues?

- ❑ Yes
- ❑ No

13.2 Does your organisation believe that e-commerce provides new sales channels and new markets?

- ❑ Yes
- ❑ No

14. Customer Resource Management

14.1 Does your organisation believe that e-commerce will assist in improving customer service?

- ❑ Yes
- ❑ No

14.2 Does your organisation believe that e-commerce provides customers with comprehensive and up-to-date information on products, thus allowing them to make useful buying decisions without asking for assistance from your organisation directly?

- ❑ Yes
- ❑ No

14.3 Does your organisation feel that e-commerce provides customers with flexibility in terms of shopping at their own convenience?

- ❑ Yes
- ❑ No

14.4 Does your organisation believe that e-commerce will provide customers with more detailed product information, thus enabling more intelligent buying decisions?

- ❑ Yes
- ❑ No

15. Cost Reduction

15.1 Does your organisation believe that e-commerce can significantly reduce selling costs incurred by the organisation when marketing their products?

- ❑ Yes
- ❑ No

16. Process Efficiency

16.1 Does your organisation believe that e-commerce will allow your organisation to improve business-to-business transactions?

- ❑ Yes
- ❑ No

17. Improve Supply "Routes"

17.1 Does your organisation believe that e-commerce allows your organisation to manage its supply chain more efficiently?

- ❑ Yes
- ❑ No

Appendix B - Covering Letter

RE: Research for Master of Commerce Dissertation

Dear Sir or Madam

I am a Masters student in Information Systems at the University of Cape Town. Having completed my course work last year, I am conducting my dissertation research now in the role of electronic commerce (e-commerce) in developing countries. My topic is entitled "**An Investigation of the Strategic Drivers and Inhibiting Factors affecting Electronic Commerce in Developing Countries.**" I am seeking your help in providing data for my analysis.

I am gathering data from organisations in Southern Africa. From this I will ascertain those factors that are seen by senior management, such as Information Technology managers in commercial enterprises, to be significant in the development (or non-development) of e-commerce.

Could you please fill out and return the accompanying questionnaire by 20 September 2000 using the self-addressed and stamped envelope provided. Your responses will be invaluable to my research and will be very much appreciated.

I promise to treat the data you have provided with the strictest confidence. All data contained in the questionnaire will be used purely for academic research and will be destroyed once analysed. If you have any questions, please do not hesitate to contact me on +27 82 854 9449 (email: petkar@yebo.co.za), or my dissertation supervisor (Mr. Adrie Stander, Senior Lecturer, Department of Information Systems, University of Cape Town, phone +27 21 650 2199; email: astander@commerce.uct.ac.za).

At this time, with e-commerce dominating technology headlines daily, it is very important for us to understand what might enable or disable the "e-commerce revolution" in developing countries situated in Africa.

I thank you for your co-operation and look forward to receiving a completed questionnaire soon.

Yours faithfully

_____

Asad Petkar