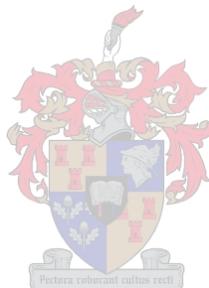


E-commerce in South Africa: an overview

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Assignment presented in partial fulfilment of the requirements for the degree of MPhil in Journalism at the University of Stellenbosch.

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"Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:

Date:

Summary

E-commerce developed as a direct result of the Internet and it has impacted the way South African businesses conduct its operations and consumers receive their information. It is impossible to quantify the e-commerce phenomenon locally - this research study aims to cover most of the important areas impacted by e-commerce in South Africa.

There are some barriers slowing the development of e-commerce in this country. The goal of this study is to determine if the local market is ready to accept e-commerce technologies that are already widely used in global markets.

This research study examines the history of the Internet in South Africa and also raises the question whether the market was affected by the global dot com crash (also known as the dot bomb crash) experienced in 2000. The study also aims to identify the barriers hindering effective e-commerce in South Africa.

It further highlights the importance of other areas of online commerce, such as mobile commerce (m-commerce), to bring the power of technology to consumers and collaboration commerce (c-commerce), to streamline business operations.

Lastly, the study aims to explore the South African government's initiatives to effectively formulate a policy for e-commerce to protect the consumers' rights.

Opsomming

E-handel het ontwikkel as gevolg van die Internet. Dit beïnvloed die manier waarop Suid-Afrikaanse besighede werk, en verbruikers kommunikasie ontvang. Dit is onmoontlik om die omvang van e-handel in Suid-Afrika te kwantifiseer - hierdie navorsingstudie se doel is om te fokus op die belangrikste areas wat deur e-handel beïnvloed is.

Daar is hindernisse wat die ontwikkeling van e-handel in Suid-Afrika belemmer. Die doel van hierdie studie is om vas te stel of die plaaslike mark gereed is om e-handeltegnologie, wat alreeds in internasionale markte in gebruik is, te aanvaar.

Die navorsingstudie ondersoek die geskiedenis van die Internet in Suid-Afrika en vra ook of die mark beïnvloed was deur die internasionale dot com ineenstorting van 2000 (dit word ook die dot bom ineenstorting genoem). Die studie kyk ook na wat effektiewe e-handel in Suid-Afrika keer.

Dit fokus op die belangrikheid van ander areas van e-handel, soos mobiele elektroniese handel (m-handel), wat tegnologie op verbruikers se voorstoepe plaas, en saamwerk elektroniese handel (s-handel), wat besighede meer vaartbelyn maak.

Laastens ondersoek die studie die Suid-Afrikaanse regering se pogings om 'n effektiewe beleid op te stel wat die verbruiker se regte te beskerm.

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1. Introduction

South Africa is part of the global Internet Revolution and the opportunities arising from the Internet are touching every arena of the local commerce landscape. The Internet Revolution can be compared to the Industrial Revolution that occurred at the beginning of the 17th, and the 18th centuries. The development of machinery advanced mankind's economic and social status - the Internet in turn, also presents vast opportunities for consumers and businesses alike.

Electronic commerce (e-commerce) in South Africa is not a new concept. The Internet impacted the way businesses conduct operations and consumers receive their communication. However, there are some barriers that slow the development of e-commerce in this country. The South African government, however committed to the process of establishing e-commerce policies, is still not showing its true dedication to adopt legislation to truly enable e-commerce.

It is impossible to quantify the e-commerce phenomenon locally – this research study merely aims to cover most of the important areas that was impacted by e-commerce locally. The goal of this study is also to determine if the local market is ready to accept e-commerce technologies already widely used in global markets.

This research study examines the history of the Internet in South Africa and also raises the question whether the market was affected by the global dot com crash (also known as the dot bomb crash) experienced in 2000. The study also aims to identify the barriers that are hindering effective e-commerce in South Africa.

It further highlights the importance of other areas of online commerce, such as mobile commerce (m-commerce), to bring the power of technology to

consumers and collaboration commerce (c-commerce), to streamline business operations.

Lastly, the study aims to explore the South African government's initiatives to effectively formulate a policy for e-commerce to result in drafting legislation to protect the consumers' rights. Due to the nature of the subject, most of the research was conducted by utilising the Internet.

2. The history of the Internet

The Internet as a commercial hub changed the way businesses think and operate. It is important to understand how the Internet works, in order to grasp the term, 'e-commerce'.

According to Whatis.com (2001), the Internet is a worldwide system of computer networks – a network of networks in which users at any one computer can, if they have permission, access information from any other computer (and sometimes talk directly to users at other computers).

2.1 The history of the Internet globally

The Internet was conceived by the Advanced Research Projects Agency (ARPA) of the United States government in 1969 and was first known as the ARPAnet.

The original aim of the Internet was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities. A side benefit of ARPAnet's design was that, because messages could be routed or rerouted in more than one direction, the network could continue to function even if parts of it were destroyed in the event of a military attack or other disaster.

According to Whatis.com (2001) the Internet is a public, cooperative and self-sustaining facility accessible by hundreds of millions of people worldwide. Physically, the Internet uses a portion of the total resources of the currently existing public telecommunication networks.

2.2 The history of the Internet in South Africa

The Internet in South Africa commenced when the first sustainable e-mail link was established in 1988 between Rhodes University in Grahamstown and

a private home in Portland, Oregon. This link was later connected to the Internet.

At about the same time the Foundation for Research Development started the Universities Network (Uninet). Before that, circa 1986, there were two networks between South African universities: one between Rhodes University, the University of Cape Town and the University of Natal in the south, and another between Potchefstroom University, Wits, the University of Pretoria and the CSIR in the north. Other universities soon joined as a result of Uninet and later the two networks were connected to each other (Buys & Rothmann, 2000: 35).

3. Internet usage in South Africa

3.1 Overview

Internet usage started to grow in South Africa with the adoption of the technology in businesses. Today, various sources, measuring different time periods, estimate the number of people with Web access via work or home in South Africa at between 1.2 and 3 million (Worthington-Smith, 2001: 4).

Three independent sources estimate the following:

Source	Date	Key findings	Comment/ Assumption
Nielsen/NetRatings	June 2001	Home 1,5 million Work 1 million	Overlap not specified
The 4 th South African Internet Services Survey	Undertaken in 2000, forecast for 2001	Dial-up 1 million Corporate 1,5 million Academic 425 000	Home / work overlap balanced by multiple home access
Webchek	2000	1,205 million	Home / work overlap of 27% and only age 18+ in major metropolitan areas

The above research findings excluded the impact of the free dial-up service offered by ABSA. While this service has had a significant increase in the Internet user base, it is estimated that only about a quarter of the more than the 200 000 user base are new and active (Worthington-Smith, 2001: 4).

Although Internet usage has grown in South Africa, we are still not on par with the rest of the world. This is due to certain legalisation barriers and until

these are lifted, each and every South African cannot experience the advantages of the Internet.

3.2 What is e-commerce?

E-commerce developed as a direct result of trade facilitated on the Internet. Initially the sole purpose of the Internet was to facilitate communication. Businesses soon started to realise that the Internet can be used as a tool to facilitate commerce. They defined online ventures using the prefix 'e' to identify 'electronic' ventures.

There are many benefits to online trading, e.g. the Internet exceeds geographical boundaries and it enables businesses to exploit new markets with the additional benefit of lower operational costs.

Therefore, e-commerce in its immensity can be defined as the use of electronic networks to exchange information, products, services and payments for the commercial and communication purposes between individuals (consumers) and businesses, between businesses themselves, between individuals themselves, within government or between the public and government and, last, between business and government (Department of Communication, 2000: 16).

3.3 Are we ready for e-commerce?

E-commerce embraces two main classes of online business activity: business-to-business (B2B) and business-to-consumer (B2C) commerce.

B2B commerce describes the use of the Internet to conduct commerce amongst businesses. B2C commerce in turn, refers to using the Internet to facilitate commerce between businesses and consumers.

In South Africa, the largest e-commerce growth is facilitated between businesses:

Projected e-commerce (web-commerce) turnover in South Africa

	1999	2000	2001	2002	2003
	Rands	Rands	Rands	Rands	Rands
B-B	3.9bn	8.0bn	17.0bn	27.4bn	37.2bn
B-C	2.7bn	5.3bn	8.3bn	11.8bn	18.8bn
Total	6.6bn	13.3bn	25.3bn	39.2bn	56.0bn

Source: Media Africa. com. 2nd SA Web Commerce Survey 1999 (Department of Communication, 2000: 105)

3.4 Business-to-business (B2B) commerce

3.4.1 Overview

The Internet is an excellent platform for businesses wanting to optimise the flow of information within its supply chain. In other words, the Internet is used to streamline operations with partners and suppliers; to reach existing and potential customers more efficiently; and from a business perspective it can also be used as an inventory tool to interact with a company's suppliers.

Essentially, a B2B exchange acts as an honest broker and a clearinghouse: an online marketplace where buyers and sellers can meet and settle transactions (Worthington-Smith, 2001: 17).

Bertoldi (2001) contends that B2B e-commerce will be driven forward by numerous factors and that for companies wishing to optimise the flow of information within the supply chain, the Internet is an excellent platform for this as the infrastructure is there today.

On the other hand, Commerce Centre CEO, Stewart Barker (as cited in Manson, 2000), believes South Africa's evolution towards B2B is about 12 months behind that of the United States and United Kingdom. B2B as a technology and an institution has not evolved much further than the theoretical stage for the local market.

"Certain initiatives are starting to deliver tangible results, processing transactions and showing cost-efficiencies and automated access to customers, but most local ventures are not showing benefits at this early stage. It will take another 12 to 24 months to mature to a level where the average local corporation can access the e-marketplace comfortably," he predicts. "Local forerunners in the race for B2B tend to be large companies (such as Sasol and Iscor), which trade internationally and are therefore under pressure to evolve."

3.4.2 E-marketplaces

The growth of B2B commerce has resulted in the establishment of e-marketplaces. The e-marketplace does not own the products that are represented on the Web site. The e-marketplace is not a retailer or a reseller. It acts as a contact broker between buyers and sellers, but does not take title to the products that are sold via the e-marketplace. In the B2C world, this would correspond to a consumer portal that acts as an intermediary between a consumer and a dot com.

Additionally, Bertoldi (2001) maintains that an e-marketplace is an Internet-based solution that links businesses interested in buying and selling related goods or services from each other. This does not mean that buyers and sellers are necessarily represented on the board of an e-marketplace - it means that the interests of one group must not prevail over the other.

E-marketplace commerce is still in its infancy in South Africa. Bertoldi believes that a well-run e-marketplace may offer significant value to its participants and, as a consequence, e-commerce via Internet exchanges will increase rapidly over the next five years.

There are specific factors surrounding the e-marketplace that cause e-marketplace commerce to grow faster than e.g. the traditional distribution channel. Bertoldi (2001) maintains successful e-marketplaces will become increasingly integrated into the backend systems of both suppliers and buyers. Consequently, a good e-marketplace should provide its users with tools that enable integration into the most common backend systems, as this will contribute to increasing the level of commerce on the Web site.

3.4.3 Technology advancing B2B exchanges

Vendors are starting to develop technologies to facilitate the integration of Web platforms. In other words, the software used by the supplier will easily

integrate with the software used by a business. For example, Microsoft announced its .NET strategy at the beginning of 2000. At the foundation of this strategy, lies the development of new systems based on Extensible Markup Language (XML), which enables systems integration between different companies. Although XML is becoming the technology of choice for B2B integration, it is still immature.

According to Buhrmann (2001), the reality today is that the market is crowded with B2B trading hubs, running on a multitude of software platforms, and it is too early to predict who the winners will be.

In many vertical industries, companies need a B2B solution that provides a platform for direct interaction with many trading partners. Most companies find it expensive to support the technology and data format used by their trading partners and B2B hubs.

At the heart of the problem lies the fact that the major marketplace software vendors - Ariba, Commerce One and Oracle - use subtly different flavours of XML in their software, limiting compatibility. A variety of industry groups and vendors are using about 50 different XML frameworks and standards (Buhrmann, 2001).

3.4.4 Summary

There is still a long journey towards perfecting B2B commerce. From a technology perspective, to effectively enable B2B commerce one industry standard Web platform needs to be used. Businesses in turn, need not only to streamline the supply of material with their existing trading partners, but also forge business ties with new trading partners on the Web.

To overcome the skepticism by some businesses with regards to security issues by trading with new partners, it will be necessary to educate businesses. E-marketplace vendors are in the unique position to facilitate

commerce between suppliers and businesses and to sooth any security concerns.

Case study: Tradeworld

Online trading hub TradeWorld, developed from I-Net Bridge, Johnnic's business-to-business arm and Rainbow Software International (RSI), was born out of a need to provide the South African business community with a convenient and cost-effective medium through which companies and individuals alike could identify and exploit international business opportunities. TradeWorld can be located at <http://www.tradeworld.com>

TradeWorld not only distributes information concerning international trade, but also combines this information and various on-line workflow application technologies to facilitate the on-line real time international trade cycle.

Its 'request for quotation' (RFQ) system is automated to the point where quotes are promptly dispatched, aggregated and returned in a form that allows direct compatibility. Buyers that sign onto the system are able to ensure that their regular suppliers are invited to quote for their business via TradeWorld. They are also exposed to new suppliers, locally and internationally. Buyers can even customise the format of reporting, and by weighting certain inputs can evaluate quotes according to predetermined criteria.

Suppliers on the other hand can categorise their product and geographical delivery capability, and receive all RFQs that meet their business profile.

The online hub has created trade-based information technologies that streamline the business process, create savings and increase efficiency. It provides tools that lower costs and establish closer, more responsive relationships with international customers, suppliers and business process partners (Worthington-Smith, 2001: 226).

3.5 Business-to-consumer (B2C) commerce

3.5.1 Overview

The local B2C commerce market has not experienced growth as South African consumers are still hesitant to shop online due to concerns regarding security, as well as a preference towards traditional shopping (to inspect the product and to conduct a face-to-face purchase). The incompetence of South Africa's postal service, in most cases, also plays a role to create the perception that the delivery of the goods will be unreliable.

3.5.2 The South African online consumer

The only true way to reach the South African consumer will be to launch an education drive to create trust in this medium.

In October 2000, PricewaterhouseCoopers commissioned an independent survey of consumers in Europe and South Africa to explore their attitudes towards privacy on the Internet. The survey also explored differences in attitudes among experienced users ("players"), non-experienced users ("newcomers"), on-line shoppers and non-shoppers.

From the findings, the message of this report is threefold:

- First, e-privacy matters. European and South African consumers have expressed real concerns about dangers to their privacy online. As such, failure to address privacy concerns will affect the future health of the e-business marketplace. The research suggests that privacy issues influence consumers' willingness to divulge personal information, and both determine the extent to which consumers enter into particular transactions and the nature of those transactions.
- Second, delivering e-solution is possible. Brands provide comfort. Consumers instinctively trust technology more than regulation or

legislation. But a holistic approach is the key – evidence suggests that consumers are most reassured when confronted by not one, but a variety of solutions that span all spheres, including the technological and legal.

- Third, educating all constituents that make up the e-business marketplace is essential – but it must be a two-way approach. Government, other agencies and technology providers have an important role to play in adequately reassuring consumers, introducing and reinforcing the existing legislative framework. Businesses need to go much further in ensuring that the interface between themselves and the consumer on the Internet is as privacy-friendly as possible.
- Finally, consumers themselves have a role to play in providing feedback to businesses.

According to the Survey, 30% of the South African respondents experienced a lack of privacy/ spying/ intrusion of their Web experience and thought that others may have access to their personal information, and that they are being tracked. 21% of the respondents felt that there is a lack of security in transactions and that others such as hackers may obtain their bank details.

The research found that consumers' concerns about their privacy centred on two main areas: firstly intrusion, or the fear of being monitored or spied on; and secondly, the risk of misuse of information or fraud when buying goods or services on the Internet. In addition, the research found that consumers consistently expressed high levels of concern about their privacy when using the Internet. Nearly one Internet user in three rated their level of concern as "high" (PricewaterhouseCoopers, 2000: 2).

3.5.3 Summary

B2C commerce has produced successful online retailing stores that has established a well-known brand and is experiencing revenue growth, e.g. Kalahari.net.

However, those who unsuccessfully attempted to penetrate this market, has learnt that it is essential to educate consumers on security issues regarding the transaction process, and to install trust in the brand and the medium. A free and open information-sharing channel needs to be established to disregard fears, to restore confidence and to increase the number of online consumers.

Case study: Kalahari.net

Online retailer Kalahari.net, Naspers's e-commerce flagship, carries 2-million products and sells items such as books, music CDs, movie digital versatile disks (DVDs) and computer related goods and has a virtual wine store. Fully integrated with its various book suppliers around the world, Kalahari.net is one of few South African merchants offering fully integrated, real time e-commerce. It has 200 local and international suppliers and a means of communicating and trading with them electronically (Text 100, 2001).

Kalahari.net announced a landmark 100% month-on-month turnover increase from February to March 2001. The figures mark a significant milestone with R2 million worth of turnover achieved.

Pretorius (as cited in Text 100, 2001) points out that rather than being a sudden jump or uncharacteristic high-month – the figures are part of a sustained, consistent and steep upward trend.

Pretorius commented that over the past six months, Kalahari.net has dedicated itself to delivering a high level of customer service and building trust in the online medium.

The e-tailer's renewed focus on building product depth in its key product categories is also cited as contributing to Kalahari's turnover growth rate. Most recently, Kalahari acquired JellyBean.co.za to broaden its range in the computerware category.

Between April and August 2001, Kalahari.net recorded 30 million pages accessed, 200% up from the previous year (Anon6, 2001).

The site is located at <http://www.kalahari.net/>

3.6 The impact of the dot bomb phenomena

In the late 1990s, start-up organisations started to utilise the Web to enable commerce. The global market accelerated with the injection it received from dot com businesses. Countless entrepreneurs were inspired to utilise the Web to sell goods in the hope to make millions.

Venture capitalists also started to invest heavily in the dot com market. Heske (2001) reports, "There has been absolute insanity in the market, here and globally. Venture capitalists especially have got a lot to answer for. I think they have misled institutional and private investors horrendously around the world and have been downright criminally negligent, but again, this is what the market is all about. If we have a gold rush, people go mad, and sense goes out of the window. When things dry up, sense returns again."

Ord (2001) maintains, that the continuing gyrations of the Nasdaq and the effect this has on technology stocks around the world indicates that the realities of the IT industry continue to remain elusive to investors chasing a quick buck. "That many of the new next-generation companies which listed during the dot com frenzy of 1999 and 2000 turned out to be dot bombs is hardly surprising. They were cobbled together by financial engineers, built on a foundation of dreams and hype about the New Economy. Few had ever done anything as mundane as make a profit."

3.6.1 The impact on the South African market

South Africa, although not directly affected by the global slump, definitely suffered from the post-Nasdaq e-commerce blues.

Heske (2001) maintains that the South African market stayed afloat during the global slump of the second half of 2000. South Africa's influential CEOs in

the e-commerce market describe their survival as "being in the right place at the right time", with a bit of vision.

According to Bertoldi (2001), the demise of the dot com market did not mean the end of e-commerce. E-business is certainly not dead. Indeed, it is the business model of the future and strategic principles need to be set in place incorporating a conservative approach in order to survive the hype surrounding it.

However, it cannot be stressed enough that e-business is just business in a different guise - a faster, more efficient one - if it is used in that context. E-business will only last if it is based on sound, tried-and-tested business models. "There is nothing new under the sun," we have been taught, and the market must realise that lasting money will take time to make.

Ord (2001) maintains that the post-dot bomb era will continue to be marked by skepticism – partly because of unrealised financial expectations and partly because of expectations about the technology which has yet to deliver fully on the holy grail of ubiquitous connectivity.

"Projections about the timing of the delivery of the new e-economy might have been optimistic, but we are moving inexorably towards the fulfilment of its promise. I'm convinced that the loss of confidence in the IT sector will be temporary. Technology complexity will continue to be a barrier, but there are already many e-business success stories which prove that the dream is based on fantasy."

3.6.2 Summary

The South African market was fortunate not to be directly affected by the dot bomb crash experienced in the global market. However, the market did experience disappointments and certain B2B marketplaces were even forced to close its doors, for example Metropolis Transactive Holdings. Metropolis operated the iafrica.com consumer Internet portal.

However, for South African companies the dot bomb crash was in fact, a blessing, as it allowed local companies with the opportunity to learn from the mistakes of B2B providers that did not survive the crash. The exposure has made many opportunists recognise the importance of establishing a sound business plan in order to ensure the success of an online venture.

3.7 Recipe to success for an online commerce site

The dot com failure occurred because online opportunists did not recognise that there is no fundamental difference between setting up a business in the real world, or in the e-world. The basic business principles remain the same.

The reality is that e-commerce is a complementary extension to the traditional business that operates from buildings or offices at a street address – a facility that customer or suppliers can physically visit, view and touch. E-commerce is a means by which businesses can conduct their business more efficiently and at the same time offer their customers and suppliers added value.

The added value is realised in terms of speed, availability, flexibility, accuracy and convenience. The e-commerce enabled business gives its customer the facility to place orders electronically, at any time of the day or night on any day of the year, from anywhere in the world where there is Internet access (Corrigan, 2001).

3.7.1 Guidelines for an effective dot com business plan

The importance of brand: Successful brands are pervasive. They transcend channel and media to support a unique selling proposition. They are an important element in building trust between the supplier and the customer. A company's brand sets customer expectations and can help sustain a degree of loyalty.

Successful e-businesses recognise the value of a brand and are investing heavily to build familiarity. Amazon, for example, has spent \$80 million to acquire about 8 million customers. This may seem a lot but the lifetime value of these people means that the investment will certainly pay back.

Incumbent suppliers in any market have a head start in terms of brand awareness (Eglash, 2001: 56).

The marketing plan: The key element of a successful marketing plan is to know your customers – their likes, dislikes and expectations. By identifying these factors, you can develop a marketing strategy that will allow you to arouse and fulfil their needs. Identify your customers by their age, sex, income/ educational level, and residential location (Eglash, 2001: 56).

Establishing partnerships: The Internet world is a land grab – it's for the aggressive and bold, not for the meek and timid. A sales and marketing plan has to focus on capturing the high ground at all cost – it's a winner-takes-all environment that takes lots of money to create the right infrastructure and deliver the right user experience. Focus on building partnerships – the Internet is all about buy, not build. Whom you choose for strategic partnerships says a lot about who you are and creates your brand image and your positioning (Eglash, 2001: 86).

Harris (2001: 14) concludes that conventional selection criteria should be used when investing in a dot com or Internet business. Look for a business model built on strong management, established partnerships and an identifiable strategic vision. These companies will capture the interest of venture capital investors ahead of the high hype and low substance dot coms.

The following points should be considered when choosing a partner for an e-business venture:

- The partner must have a strong mix of skills in business strategy and processes and have superior analytical expertise;
- Experience in marketing and branding on the Internet is a must;
- They must have had exposure to a variety of technologies as well as integration skills to provide a total solution;

- Enquire whether they have the products and tools to provide a world-class solution?
- Project management, interface design and creativity are prerequisites

(Dicey, 2001: 17-18).

The Web site: According to Matthews (2001: 1), appearance is not the most important factor influencing the success of an e-commerce or Web-enabled initiative. Far more significant is the transactive content. He defines transactive content as the idea that successful use of the Web in business requires a combination of customer interaction, content and commerce management.

Matthews reports that it is no longer enough to have your products online and available for purchase. A successful site must provide a dynamic storefront for the business and it should offer potential customers a rewarding browsing experience if it is to be successful in the long term.

3.7.2 Summary

The mistakes that were made by the failed dot coms are enough evidence that business on the Web cannot be treated differently. A Web site has to be an extension to a business's brick and mortar operations and a business should not attempt to move all its operations online. The best solution to succeed online, is to follow the tried and tested rules of traditional business practise.

A Web site is an effective tool to lure shoppers into brick and mortar operations, but over-investing in your Web site could also result in a loss in profits. The best approach would be to measure the value of your Web site to establish whether it is making a positive impact on customers. It is important

that the customer experience this arm of the brick and mortar operation as a pleasant added benefit.

4. Barriers hindering effective e-commerce locally

South Africa sadly still lags behind the rest of the world both in terms of the availability of Internet connectivity to users and the way the Internet is used in this environment. There are a number of barriers hindering the effective utilisation of the Internet in this country:

4.1 The Telkom monopoly

In 1996, Telkom was given exclusive rights in respect of the operation of private telecommunication networks in South Africa. The reasoning was that Telkom would then receive a guaranteed stream of finance, making it able to fulfil an obligation to government to provide telecommunication infrastructure to disadvantaged areas of the country, such as rural communities and townships (Worthington-Smith, 2001: 262).

In 1997 the South African Telecommunications Regulatory Authority (SATRA) ruled that Telkom's exclusive rights do not extend to Value Added Network Services (VANS), which include Internet access services. Among the licenses issued to Telkom in 1997 is a license to provide VANS in terms of section 40 of the *Telecommunications Act, no 103 of 1996*.

This license gives Telkom the right to provide VANS, which is defined to include electronic data interchange, e-mail, protocol conversion, access to a database or managed data network service, voice mail, store-and-forward fax, videoconferencing, telecommunications-related publishing and advertising services and electronic information services.

Telkom's Public Switched Telecommunications Service (PSTS) license gives it an exclusive right to provide certain elements of the Public Switched Telecommunications Service. This includes the International Telecommunications Service and all telecommunication facilities to be used

by any person for the provision of Value Added Network Services such as Internet access. Therefore, access providers are forced to use telecommunications facilities provided by Telkom (Buys & Rothmann, 2000: 31).

Telkom's monopoly has a damaging effect on the local market. In other words, if you lived in the United States, you would have numerous options to 'up' your bandwidth, such as cable television lines, fibre optic cabling or fixed wireless applications. Many competing companies provide each technology, and depending on your budget, even broadband is available at monthly rates of less than the cost of a meager local dial-up connection.

Not in South Africa. Telkom's license gives it the exclusive right to provide the international communication service and all telecommunication facilities to be used for Internet access. Internet Service Providers (ISPs) therefore have no option but to use Telkom to connect their subscribers to the Internet. In essence then, your Internet experience is constrained by the amount of bandwidth and priority your ISP has managed to acquire from Telkom, and on the number of people sharing that Telkom pipe with you (Worthington-Smith, 2001: 262).

4.2 The Telecommunications Amendment Bill

In mid-2000, the Parliament Portfolio Committee on Telecommunications set out to draft the *Telecommunications Amendment Act no 12 of 1997*.

The aim was to amend the *Telecommunications Act of 1996*, and among others: to make provision for radio frequency access in the 1800 MHz frequency band; to make provision for new kinds of licenses; to make further provision for applications for licenses and the consideration thereof; to provide for public switched telecommunication services and public switched telecommunication networks; to further regulate mobile cellular telecommunications services; to further regulate private telecommunication

networks; to make further provision for the interconnection of telecommunication systems; to provide for emergency centres and to make further provision for certain functions of the Independent Communication Authority of SA (ICASA).

In mid-2000 a parliamentary committee revised the ground rules for enhanced telecommunications competition. The aim was to table changes to the law to encourage competition amongst fixed-line telephone operators and to protect mobile operators.

Another objective was to lay the foundations for the partial listing of the largely state-owned Telkom by end of March 2002 and the licensing of its first fixed-line rival by May 2002.

There was a strong response from the industry regarding the draft *Telecommunications Amendment Bill*. Industry bodies such as ICASA, SA Value-Added Network Services Association (SAVA), Internet Service Providers Association (ISPA) and affected companies then called for substantial changes to the Bill to meet the technology challenges of the new millennium. (Anon7, 2001: 1).

These players have indicated that they plan to take the government to the Constitutional Court and possibly the World Trade Organisation, should the Bill not be amended. The outcome of this whole debate is still awaited.

The strong response was due to the fact that the *Telecommunications Amendment Bill* did not meet the objectives it set out to achieve. Since ICASA's inception, industry participants, including Telkom, have participated in ongoing lengthy public processes. Unfortunately, the drafters of the Bill have discarded many of ICASA's rulings without the benefit of having heard the numerous submissions.

Additionally, the *Telecommunications Amendment Bill* ignored some of the recommendations ICASA made with regards to Value Added Networks

(VANS) and Virtual Private Networks (VPNS). The Bill will only benefit individual entities in the VANS and ISP industry, notably Telkom, which will have a negative effect on the industry as a whole. The Bill, in essence, shows contempt for the industry regulator and raises serious questions regarding the intent of drafting the Bill (Anon2, 2001: 1).

4.3 Infrastructure

As the demands for the Internet continues to accelerate, the infrastructure would have to expand to serve the growth in users. Users in South Africa are making specific demands in terms of infrastructure capacity (bandwidth, especially for combined data, video, voice and other services) and demands are growing exponentially as the use of the Internet expands.

Analogue modems are currently the most common method of access to the Internet and data services by residential wireline users, because of lower price. Much of this access is however at very slow speeds. It is presumed that this lack of capacity constrains what services these users can get from the Internet (Department of Communication, 2000: 83).

According to a study conducted by AC Nielsen Netwatch (Worthington-Smith, 2001: 5), South Africa has relatively few active users compared to other markets. The global average to spending time online is close to nine hours a month. Low bandwidth and primitive functionality are probably the cause – in South Africa the Internet is relatively less convenient for browsing and shopping, but adequate for e-mail usage.

Home Usage – June 2001			
	South Africa (million)	United Kingdom (million)	United States (million)
Total home users	1.5	23.4	167.1
Active Internet users	0.7	12.7	101.5
Percentage of active users vs. those with access	46.6%	54.2%	60.7%
Average time spent per month	4h 32 min	5h 59min	9h 45min

Source: AC Nielsen Netwatch (Worthington-Smith, 2001: 5)

The infrastructure deployed in South Africa at the moment will not only need to be expanded into under-serviced areas with the appropriate capacity, but at the same time capacity in serviced areas will have to be increased.

4.4 Affordability of access

Although South Africa has the most developed infrastructure in Africa, with over five million telephone lines with teledensity of approximately 12%, it is still a dream for the majority of citizens to have access to telephones and computers. For vast segments of the population, in rural areas, teledensity stands slightly over two percent, and infrastructure is typically unaffordable. In major cities and other urban centres however, high technology facilities and services are widely available to those portions of the population, which can afford them (Department of Communication, 2000: 84).

A significant barrier to the development of e-commerce in South Africa is the lack of access. Government made a policy decision that the roll-out of infrastructure will be better achieved through a period of exclusivity for Telkom which allows it the opportunity to roll out services, especially in places where services have not been available in the past, and modernise network infrastructure. However, Telkom's efforts alone are not sufficient to achieve the entire infrastructure needed for e-commerce. Furthermore, the deployment of appropriate technology that has adequate data capability must be accelerated in areas where it is needed.

The prices charged by telecommunications operators for access to crucial services can be a major factor determining the effectiveness and affordability of e-commerce opportunities on the whole. These prices become burdensome for smaller entrepreneurs, ISPs and public operations such as telecentres where affordability to connect to the global backbone is important. Broadband access for the last mile for residential customers needs to be based on a significantly lower pricing structure so as to change how small businesses and citizens use networks (Department of Communication, 2000: 85).

4.5 Bridging the digital divide

The number of individuals worldwide with Internet access is estimated at between 350 to 400 million users. Just over half of those with access are considered active users (e.g. those who have accessed the Internet at least once in the previous month).

The South African web market comprises somewhere between a half and one percent of the world market. The user base is predictably low relative to the population of the country, illustrating the challenge South Africa faces in bridging the digital divide (Worthington-Smith, 2001: 5).

Technology is not readily available to all South African citizens. There is a big gap between technology availability in the cities and rural areas.

The South African government recognises that the 'digital divide' in the country needs to be addressed. The Department of Communication (Department of Communication) (2000: 105) reports that the digital divide refers to the distribution of inequalities in the information, communication and telecommunication (ICT) markets between developing and developed economies. The North-South digital divide is real and needs to be addressed. It also refers to the gap in the information sphere between most developed parts of the country and underdeveloped rural parts, including disadvantaged groups.

The Department of Communication (2000: 105) maintains that the challenge is how to narrow down the gap between "information haves" and "information have-nots" through addressing inequalities and inequity. If this matter is not urgently addressed, the benefits of e-commerce will be enjoyed by only a few and the expansion of e-commerce would indeed contribute to broadening rather than reducing a possible digital divide.

In order to bridge the digital divide, the government would have to initiate a major technology drive in urban areas. More specifically, the infrastructure should be laid out to initiate such a drive. The best solution for our environment would be to privatise the telecommunications industry to allow other telecommunications operators into the market. Within a competitive environment, the market should flourish and technology will be brought to rural communities.

5. Enabling e-commerce in South Africa

There are a number of different role-players affecting the local e-commerce landscape:

5.1 Telkom SA Limited and the South African Internet Exchange

Telkom SA Limited historically enjoys an exclusive right to the establishment of basic telecommunications infrastructure in terms of the *Post Office Act, no. 44 of 1958*. Telkom's monopoly is founded in section 78 and 7(2) of the *Post Office Act*. Section 78 is incorporated by reference into section 36(1)(a) of the *Telecommunications Act, no 12 of 1997*.

Telkom's monopoly is excluded or limited in respect of broadcasting, the operation of private telecommunications networks and the provision of cellular communication.

In 1997, SATRA ruled that Telkom's exclusive rights do not extend to Value Added Network Services (VANS), which include Internet access services. Among the licenses issued to Telkom in 1997 is a license to provide VANS in terms of section 40 of the *Telecommunications Act*.

This license gives Telkom the right to provide VANS, which is defined to include electronic data interchange, e-mail, protocol conversion, access to a database or managed data network service, voice mail, store-and-forward fax, videoconferencing, telecommunications-related publishing and advertising services and electronic information services. Telkom's Public Switched Telecommunications Service (PSTS) license gives it an exclusive right to provide certain elements of the Public Switched Telecommunications Service.

This includes the International Telecommunications Service and all telecommunication facilities to be used by any person for the provision of VAN services such as Internet access. Therefore, access providers are forced to use telecommunications facilities provided by Telkom.

Telkom has offered Internet access since 1996 through the South African Internet Exchange (SAIX), a wholly owned subsidiary of Telkom. As SAIX is only an access provider and not a service provider like other ISPs, its costs are very low, as the cost associated with a value-added service is not incurred. At the end of 1996, Telkom launched Intekom, an ISP that sells Internet services on the open market (Buys & Rothmann, 2000: 31).

5.2 Internet Service Providers Association

The Internet Service Providers Association (ISPA) was formed in June 1996 in a response to the perceived threat to independent Internet access posed by the entry of Telkom into the Internet access market in the form of SAIX and Intekom.

ISPA controls the South African peering points located in Johannesburg (JINX) and Cape Town (CINX). This allows member ISPs to carry their inter-South African traffic effectively without having to rely on agreements in the United States or Europe.

In 1996 and 1997 the ISPA decided by majority vote to exclude Telkom, SAIX and Intekom from connecting to these peering points because of the political stand-off between these organisations. This changed in 1998 when all access providers were allowed and Intekom immediately joined (Buys & Rothmann, 2000: 30,31).

5.3 South African Telecommunications Regulatory Authority

The South African Telecommunications Regulatory Authority (SATRA) is a statutory body established in terms of section 5 of the *Telecommunications Act* and is a regulatory watchdog for the telecommunications industry. One of the motivating factors for the creation of SATRA was to bring about a telecommunications environment with a clear separation between the functions and the powers of the government, telecommunications operators and a regulator (SATRA) to encourage transparency and accountability.

SATRA is responsible for the administration of government policy, issuing licenses, managing the radio frequency spectrum and implementing a range of tasks mandated by the Telecommunications Act (Buys & Rothmann, 2000: 31).

5.4 Department of Communications

The Department of Communications (Department of Communication) is the public service arm of the Ministry for Posts, Telecommunications and Broadcasting. With the establishment of the new political dispensation in South Africa in 1994 it was decided to place posts, telecommunications and broadcasting in one cabinet portfolio. The reasons for this move were that one ministry should head all forms of communication and because of the growing technological convergence between telecommunications and broadcasting (Buys & Rothmann, 2000: 32).

5.5 The Internet Service Provider

Internet Service Providers (ISPs) provide full access to the Internet. According to Whatis.com (2001), the term ISP covers a very broad set of companies; ranging from large organisations that own the network infrastructure, to smaller businesses that merely broker the service. The

term Internet Access Provider (IAP) is becoming more common when referring to these smaller organisations.

The ISP market in South Africa has segmented and it is now clear to distinguish between the major players operating in this field. The major ISPs are now focusing on core competencies such as network, subscriber and content management. The smaller players typically concentrate on a local town or a niche market sector.

Case study: UUNET SA

UUNET SA is the only non-aligned South African-based global Service Provider that provides a gateway to Africa through its world-class pan-African network connecting eleven African countries. The largest carrier of Internet traffic in Africa, UUNET SA provides Internet connectivity and corporate network services to major corporations as well as access services to Internet Service Providers (ISPs).

UUNET SA began its operations in May 1995, as Public IP Exchange (pipex), a Datatec subsidiary and a corporate and individual dial-up Internet service provider (ISP). It has since shifted its focus exclusively to the corporate network management and VISP (Virtual ISP) market.

According to Lith (as cited in Anon1, 2001) UUNET SA provides Internet communications and Internet value-added services to corporations and ISPs around South Africa and in many other African countries. Its services include dedicated Internet access, hosting services aimed at providing infrastructure to application service providers and companies seeking Web-hosting commerce solutions, Internet related security services and mobile data networking.

UUNET SA forms part of the WorldCom group and has global presence in 2 500 cities and manages 1.6 million ports on its network. Geographical expansion is very strategic to UUNET due to its large global account base to connect to its branches worldwide. Lith comments that WorldCom, as UUNET SA's global parent, serves to ensure that the company has a broad, leading-edge view of both technology and the ways in which it can be deployed to obtain the greatest business benefits for its customers.

UUNET has a range of technologies and products including:

- Leased line Internet access
- Hosting – a suite of datacentre services offered by the company
- Security – the company's range of security products and services
- Dial Access – products aimed at corporations who need to provide their employees with dial-up access
- Mobile – the latest addition to the company's product set, which allow for mobile data access

6. Other areas of online commerce

Mobile commerce (m-commerce) and collaboration commerce (c-commerce) both developed as a direct result of e-commerce. These technologies are perfectly poised to become the future technologies that will benefit the local environment.

6.1 Mobile commerce

6.1.1 Overview

Mobile technology holds a myriad of opportunities for consumers and businesses. Future forecasts predict that data is going mobile and that, as bandwidth improves with time, most of the applications and data will move from the personal computer to the Web. The convergence of the Internet and mobile technology, will result in an increase for the demand for devices and software that interface with consumers, e.g. a user friendly Personal Digital Assistant (PDA).

According to cellular.co.za (2001) there are currently 15 million mobile users in Africa, of which South African users make out the larger portion with a total of 9.6 million.

The South African market is divided in its opinion on the adoption of mobile technology and whether it will really take off in this country. Some believe that our unique environment and the growing number of cell phone users, make it the unique playground for emerging technologies. Others believe that consumers failed to adopt m-commerce technologies such as Wireless Application Protocol (WAP), to effectively utilise cell phones.

6.1.2 The South African environment

The expansion of the Internet has to include devices that “move with us” and is particularly exciting in South Africa. Citizens of the middle and lower income groups are fast acquiring cell phones, and this market trend holds the key to bridging the digital divide. M-commerce may well turn out to be the platform for socio-economic renaissance in Africa (Worthington-Smith, 2001: 247).

For consumers, technology is rapidly moving away from the office and closer to the individual. Up till now, mobile technology in this country was mostly transaction based. It enabled users to conclude banking over cell phones.

Many companies however, use Global System for Mobile Communication (GSM) solutions to streamline existing business processes. Whatis.com (2001) describes GSM as a digital mobile telephone system that is widely used in Europe and other parts of the world, including South Africa. GSM digitises and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot. It operates at either the 900 MHz or 1800 MHz frequency band.

For example, GSM has allowed for mobile applications to be developed for sales force automation (applications which streamline the sales process), trouble ticketing (systems which flag system problems and automate resolution) and support (Worthington-Smith, 2001: 250).

Another basic form of m-commerce technology is short message services (SMS). Consumers have readily adopted the use of SMS, the ability to send text messages up to 160 characters long from one cell phone to another, and some believe that this is an indication that once all the technologies are in place, the growth in the mobile market will accelerate.

Goldstuck (2001) reports that by 2004, consumer mobile commerce will have emerged as a major market, with up to R6.4-billion in transactions. This will still be dwarfed by the B2B mobile, which will reach up to R74-billion, thanks to its critical role in streamlining logistics in large organisations.

There are skeptics who believe that the positive forecasts for the m-commerce market are being exaggerated. Eedes (2001:12) believes that most cellular handsets are WAP-enabled, but most customers either do not bother using the feature or are exasperated trying to set it up.

One of the biggest headaches in our environment is the frustrating slow pace of wireless data transmission. Most mobile users achieve data transmission speeds of about 9,6 kilobytes/second. The average home dial-up connection is four times quicker. The result is that anyone brave enough to download e-mail on the road using a cell phone is likely to wait an impossibly long and costly time.

Additionally WAP, the standard that put the Internet on to mobile devices, failed to generate mobile interest and to deliver tangible business value.

However, the biggest opportunity for m-commerce in the South African environment is embedded in cell phones. There are currently around nine million cell phones in use in South Africa (Worthington-Smith, 2001: 256).

The penetration into the black market has also been phenomenal and this illustrates just how ready previously disadvantaged citizens are for communication technology.

Once Internet services become available to cell phone users, it will enable South Africa to cross its digital divide. The promise to bring the power of the Internet to consumers will only happen when the GPRS infrastructure is up and running – forecasted for the first quarter in 2002.

6.1.3 Mobile Commerce in Africa

The growth of mobile cellular and other wireless technologies in Africa in the past few years have been exponential. The mobile cellular telephony subscriber base grew by 50% across the African continent in 2000 (Anon2, 2001).

According to the local research house BMI-T (Anon3, 2001), this growth is bound to continue at a sustained level in the near future, and if we look at sub-Saharan Africa itself, it is even more likely to increase due to the rapid take up of pre-paid services. In the past year the mobile cellular subscriber base has grown twice as fast as fixed line rollout.

The result in African countries is, given the premise that economies of the developed world are driven by information availability and communications, we can reasonably expect economies of the poorest continent in the world to also witness increasing expansion as vital sources of information and means of communication become available to even wider business circles, and as prices of such services decrease amid growing competition.

Due to their versatility, and often inadequate fixed-line coverage, mobile services present a superior communications option for business subscribers. This mode of communication will become even more appealing as basic data services are introduced to mobile networks, e.g. the ability to obtain stock prices on line. Fixed wireless technologies often fill a gap left by fixed-line operators in the form of small regional network operators providing vital telephony and data services in major business centres.

Satellite communications also play a very important role. This is particularly favourable to Internet Service Providers (ISPs), who can use satellite bandwidth either in remote areas of a country, or to beam data into the country.

Due to satellite communications, many more businesses in Africa have access to Internet services than otherwise would have been the case. In general, mobile telecommunications has created a greater awareness of the demand for IT infrastructure and services, which drives growth in this sector of the telecoms market, and has a positive ripple effect on other areas of the economy (Anon3, 2001).

6.1.4 Obstacles facing the South African market

One of the biggest obstacles facing the uptake of m-commerce in the local market is telecommunications regulation that prohibits the effective development of mobile communication technologies.

The South African Telecommunications Regulatory Authority (SATRA) is responsible for telecommunications regulations in South Africa, under the authorisation of the *Telecommunications Act No. 103 of 1996*. SATRA grants licences for every service that a service provider intends to provide, as opposed to licensing a particular network irrespective of what services are provided on that network (Buys & Rothmann, 2000: 31).

Under South Africa's *Telecommunications Act*, Telkom has the exclusive right to provide among others, "public switched telecommunications services". Service providers wanting to render mobile communications services have to be careful not to infringe on Telkom's rights.

The Act provides that no person who is licensed to render value-added network services may permit the carrying of voice messages over its network, as the provision of voice services are the exclusive right of Telkom and other specifically licensed bodies. The implications relating to the *Telecommunications Act*, restrict the development of mobile technologies locally.

Once the South African telecommunications market is deregulated, foreign investors will view Africa as a more viable investment option. The deregulation will allow for healthy competition in the market, which will be beneficial for the development of m-commerce technologies.

6.1.5 The future of mobile-commerce

M-commerce is giving rise to a hybrid of solutions that will increase the drive for adoption among the South African audience.

6.1.5.1 Bluetooth

Bluetooth technology will also be a major drive in the local communications market. It is a low power radio technology that is being developed to replace the cables and infrared links for distances up to ten metres. Devices such as personal computers, printers, mobile phones and Personal Digital Assistants (PDAs) can be linked together to communicate and exchange data via a wireless transceiver that fits onto a single chip. This implies the synchronisation of different pieces of equipment such as a mobile phone, PDA and personal computer, which will make it possible to perform only a single entry with any of the devices used (Worthington-Smith, 2001: 256).

6.1.5.2 GPRS for data over the cell phone network

Whatis.com (2001) describes General Packet Radio Services (GPRS) as a packet-based wireless communication services with data rates from 56 up to 114 Kbps and continuous connection to the Internet for mobile phone and computer users.

Once GPRS becomes available, it should cost users less than circuit-switched services since communication channels are being used on a shared-use, as-packets-are-needed basis rather than dedicated only to one user at a time.

6.1.5.3 Mobile entertainment

There are a number of usages for mobile applications that will present advantages for consumers. For example, mobile entertainment such as games, music and betting will become interesting applications for m-commerce, because of its ability to function in real-time.

6.1.5.4 Smartphones and Smartcards

The cell phone is developing at a rapid speed into a personal computer (PC) in its own right. PDA functionality will soon be available on all handsets, not just the top-end models. SIM cards can be easily upgraded to 32k, the standard for Wireless Internet Browsing (WIB) or Wireless Internet Gateway (WIG) services on the Internet. This technology allows ordinary phones to be used like a WAP phone, except that the browser is stored on the SIM card instead of the phone's memory (Worthington-Smith, 2001: 256).

Another advantage for consumers will be the development of mobile membership systems. In other words, instead of using a membership card, a magnetic strip or smartcard, club memberships could be stored on the mobile device, e.g. on the SIM card. Using Bluetooth in the cellular phone and at the Point of System (POS), users will be able to automatically check in at a health club, without having to carry a card on them.

6.1.5.5 Wireless networking

Wireless networking is fast becoming an important business element in companies globally and locally. Wireless networking will enable users to stay connected wherever they go, and in essence mean that connectivity to the Internet is always 'on'.

According to the BMI-T, in South Africa the demand for wireless networking solutions is on the increase amongst companies with a specific profile. The BMI-T expects the South African market to grow dramatically, achieving a compound annual growth rate of approximately 40%, from 2000 to 2005 (Anon4, 2001).

6.1.5.6 Summary

The global trend towards the convergence of the Internet and mobile technology has accelerated in South Africa. With its growing number of cell phone users, South Africa is set to become a unique playground for foreign m-commerce investors.

The South African consumer has been slow to adopt WAP technology, partly because of the high expenses involved in using the technology. However, once the local telecommunications environment is deregulated, foreign investors will take an interest in the market, which will allow for healthy competition and hopefully lower costs for consumers.

As GPRS become widespread, m-commerce will start to take-off on a bigger scale. The South African market will experience a consolidation in this space as companies begin to position themselves for post-deregulation. There will be upgrades to GSM networks as mobile service providers prepare for GPRS and 3G installations to meet the growing need for organisations to own a totally integrated communications network.

According to Whatis.com (2001), 3G is an abbreviation for third-generation wireless, and refers to near-future developments in personal and business wireless technology, especially mobile communications.

The advent of m-commerce will result in an increase in the demand for services such as mobile banking and remote wireless applications, which are vital tools for companies that operate in emerging markets such as Africa where cable based communication networks are unstable.

6.2 Collaboration Commerce

6.2.1 Overview

Rossouw (2001) maintains that collaboration is a process that enables companies to use the full power of the Internet to improve revenue and profit by moving beyond traditional static supply chain models to a model of seamless information exchange between business partners.

Collaboration commerce (c-commerce) technologies developed as an extension to Enterprise Resource Planning (ERP) solutions. According to Whatis.com (2001), ERP is an industry term for the broad set of activities supported by multi-module application software that helps a manufacturer or other business manage the important parts of its business, including product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service and tracking orders.

ERP can also include application modules for the finance and human resources aspects of a business. The deployment of an ERP system can involve considerable business process analysis, employee retraining, and new work procedures.

With business being conducted over the Internet, it has become a necessity for companies to deploy Web-enabled solutions to keep ahead in a competitive market. C-commerce technologies were subsequently invented.

6.2.2 The advent of c-commerce solutions

Before the advent of the Internet, a company's supply chain was restricted to its warehousing and distribution activities. Collaboration was not a new concept, but a very old one. Business partners exchanged information via the phone, fax, mail or e-mail.

The 'old' procurement process was largely a manual process. Buyers faxed purchase orders to suppliers. Suppliers fax back a confirmation. The impact of the expected delay was evaluated and communicated 'manually' to involved parties. The whole procurement process comprised more than 60% of the total order cycle time (Teijken, 2001: 22).

The Internet has opened up a new world and the new collaborative view of the supply chain is that it is one overall, seamless "logistics" end-to-end supply chain process including vendors, customers and other business partners (Rossouw, 2001: 3).

The scenario today has changed rapidly. C-commerce builds on what companies have been doing over the past decade with the Internet and other technologies. They have generally used these internal systems to share information and simplify procurement processes. C-commerce pushes these experiences to the next level.

To explain the operation of c-commerce in a nutshell: in the networked economy, there are increasing strategic and operational advantages from sharing planning, decision-making, workflows, capabilities and information with a whole range of people. This is more than supply chain management, though c-commerce certainly involves extending and deepening relationships with suppliers and vendors. It is about extending the sharing to customers and others involved in value chains.

Companies are effectively now opening parts or all of their private IT networks to those whom they want to build closer business links with. They are sharing proprietary information with those they are prepared to trust in order to build competitive advantage and improve cost efficiencies. The issue of trust - or lack of it - is one reason why public e-markets, particularly those co-owned by industry rivals, have yet to deliver on their promise (Solomon,

2001).

6.2.3 Enabling c-commerce

For collaboration to be successful, the trading partners have to acquire a high level of trust. Most companies are hesitant to exchange or to share vital business information. Both parties need to understand that collaboration means a win-win situation with mutual benefits for everyone involved (Teijken, 2001: 8).

By starting to build collaborative relationships concerning product development or demand forecasting within the supply chain, a company or an industry segment could drastically reshape the business models and acquire significant competitive advantage in relation to the laggards. But still, few of these items are standalone or independent. The mixture and timing of different phases are therefore best crafted under a sound and consistent Internet strategy (Whalley, 2001).

The technologies enabling effective collaboration, are the Internet and Extensible Markup Language (XML), a computer language that structures and standardises data elements, allowing for the open and efficient transfer of business Department of Communications over the Internet. With XML, it is now possible to transfer high volumes of data at low cost, and to enable enterprises to establish secure and scalable networks for collaboration activities.

According to Rossouw (2001: 13), the best collaboration systems will have the following capabilities:

- They will integrate easily with existing systems, at the lowest possible cost;

- They enable integration between business partners;
- They can be implemented incrementally and in any order, allowing users to tackle areas of most pain, or with maximum return on investment (ROI);
- They can be easily changed as business processes change – this is essential as companies move to participate in a c-commerce network;
- They provide real-time visibility across the commerce chain;
- A solid backbone (ERP) of the right information is crucial for success.

6.2.4 Summary

Sceptics in the industry believe that there is not any value in the term 'c-commerce'. They allege that this term was created by ERP vendors to re-invent existing technologies by using a new name. In other words, commerce has always been collaborative in the sense that two businesses or more, exchanged products, services, information and money with each other – companies always collaborate to secure effective commerce.

However, the scenario in the market is that software vendors are inventing new technologies to streamline the process. The 'old' collaboration process was a manual one, and collaboration functionality is now added to supply chain management software and logistics applications, among others, to streamline operations and to save valuable operational time.

C-commerce is not just about the technology, it is also about educating businesses on building collaborative relationships which will enable the free flow of information.

To conclude, in a world where technology advances at the speed of light, it is essential to implement 'collaboration' into an organisation's business model to streamline its business and to provide it with a competitive edge.

7. Government Initiatives

7.1 Overview

The South African government first acknowledged the impact of e-commerce on the market in 1999. In an effort to start an open discussion on the topic, the government released the *Discussion Paper on Electronic Commerce Policy* for public debate. Almost a year after the launch of the Discussion Paper on Electronic Commerce Policy, the Department of Communication released *A Green Paper on Electronic Commerce for South Africa* in November 1999.

The Department of Communication planned to finalise a White Paper on e-commerce in the 2nd quarter of 2001 and thereafter specific legislation in the 3rd or 4th quarter of 2001. However, the process is continuing and a final framework is still to be finalised.

The following section provides highlights from the *Discussion Paper on Electronic Commerce Policy* and the *Green Paper on Electronic Commerce Policy*.

7.2 The Discussion Paper on Electronic Commerce Policy, July 1999

With this paper the government acknowledged its aim to establish e-commerce policies and practical programmes that will improve the quality of life for all South Africans (Department of Communication, 1999:4).

The discussion paper mentioned the government departments that should be involved in defining and implementing South African e-commerce policies. These are:

- Department of Education: Overall education policies on information technologies; distance learning programmes;
- Department of Labour: Programmes on skills training, technology job placement, policies on industry evolution;
- Department of Health: Tele-medicine programmes, health information database and education initiatives;
- Department of Trade and Industry: World Trade Organisation (WTO) negotiations, import and customs issues, harmonisation of a South African policy with global treaties, and local industrial strategies, particularly the South African Information Technology Industry Strategy (SAITIS) project;
- South African Bureau of Standards: The establishment and management of standards;
- Department of Finance, South African Revenue Service: Policies on cryptography including digital signatures, certification authorities, public key infrastructures;
- Department of Arts, Culture, Science and Technology (DACST): Policies relating to development of technology, particularly the Information, Communications and Technology (ICT) sector of the national research and technology foresight project, as well as cultural expression via new technologies;
- Department of Justice, National Intelligence Agency: Investigation and prevention of cyber fraud, illegal transmissions and other security threats; establishment of information technology security policies for government;
- Department of Public Service and Administration: Establishment of information technology and information management policies for government;
- Department of Public Works: Electronic archiving policies and strategies;
- Department of Home Affairs: Development of a national identity card with a smart chip catering for various uses;

- South African Reserve Bank: Initiatives on electronic payments, funds exchange, inter-bank technologies and electronic money

(Department of Communication 1999:9).

According to Groenewald (2000: 108) a number of unique issues for South Africa have surfaced in the course of the outlining of the Discussion Paper.

These include:

- Understanding the issues of the so-called “unbanked society”, whose economic wealth is referred to as “mattress money”: not keeping a savings account but rather under mattresses. How does one deal with this in the electronic domain? The conversion of cash to something accepted electronically is no simple task. Reaching the unbanked society is a tremendous challenge, made more difficult by the fact that it is not always easy to define who or where such people are;
- Infrastructure and access are typical challenges in developing countries. Statistics show an improvement in access in some communities, but there is still an uphill struggle ahead;
- The benefits of e-commerce in underdeveloped communities. South Africa has a high crime rate. In line with the gap between haves and have-nots, criminals in underdeveloped areas are unsophisticated. Consequently an interesting benefit of e-commerce may be that criminals will not be able to defraud or access an electronic domain. A step towards effecting this improvement is seen in authenticating recipients of welfare payments in the Eastern Cape via electronic identification systems. Thus the mechanisms needed to effect e-commerce may have a broader impact and so maximise benefits in unique ways;
- Southern African Development Community (SADC) and the Africa context. South Africa is not an island. Clearly there is a strong need for integrative initiatives. The GIIC Africa, “African Connection” and a host of other initiatives are helping to raise awareness and bring Africa closer to implementation of what could be a leapfrogging concept. In

debating and establishing policy, South Africa must not ignore these initiatives and must continue to engage in discussions with other countries to ensure that the impact of its own policies benefits other developing nations.

7.3 *The Green Paper on Electronic commerce for South Africa, November 2000*

The green paper covers four major aspects, namely legal and regulatory issues; building trust in the digital economy; enhancing the information communication infrastructure and maximising benefits.

Regarding legal issues, the Internet brings new threats in the form of electronic fraud and cybercrime. It is vital to set a legal framework to protect the rights of the consumer.

The Internet is still a relatively new phenomena in South Africa, and the first attempt to structure guidelines for Cyberlaw was initiated by the government with its *Green Paper on Electronic Commerce*.

For years legal opinion was lacking regarding the Internet. Archaic legislature are inadequate for the task, often demanding ink-signatures scrawled on paper in the presence of witnesses – impossible demands for an electronic medium.

South Africa's biggest hope in establishing a legal framework is derived from the *Green Paper on Electronic Commerce*.

With the green paper, the government also identified its responsibility to developing and enabling conditions for growth of e-commerce by preventing and removing barriers.

Challenges for the government specifically revolve around:

- The need for adequate protection;
- Promoting easy and affordable access to information and communications infrastructure, technologies and services;
- Expanding policy issues associated with greater and faster broadband deployment and forward looking telecommunications market;
- Ensuring rapid adoption of e-commerce by small to medium sized enterprises (SMMEs);
- Promoting and reinforcing education, skills development and awareness;
- Positioning government as a model user of e-commerce in procurement and delivery processes;
- Adjusting the existing domestic and international regimes to this new reality;
- Facilitating the development of the coherent SADC e-commerce framework (Department of Communication, 2000:19,20).

In the *Green Paper on Electronic Commerce*, several policy issues arise as a result of the proliferation of e-commerce. These include development and access to the Information, Communication and Technology companies (ICTs); taxation; security and privacy; protection of intellectual property; content development and regulation; electronic payment systems; standards and interoperability (Department of Communication, 2000: 18).

Another important point mentioned in the green paper is that the government recognises that the South African financial services sector is well advanced, especially for providing business services in urban areas. The South African Multiple Option Settlement (SAMOS) System was developed by the South African Reserve Bank and has been operational since 1998. The system links all the settlement banks in the country and allows real-time settlement between banks.

Major South African banks have data networks connecting their branches and large corporate customers. These accomplishments mean that the financial sector is well positioned, especially with regard to large corporate businesses, to support widespread applications of e-commerce (Department of Communication, 2000: 101).

7.4 Summary

The challenge for South Africa is to develop a policy framework and strategy that will optimise and exploit the benefits of e-commerce. It has to move strategically and quickly to position and develop its competitive edge within this new economy, based on its own particular political, social cultural, economical and technological conditions.

The green paper encourages an open-minded approach to the whole industry. However, the government should aim to stimulate e-commerce rather than to over regulate it. In the Green Paper the government also recognised the importance of establishing effective e-commerce processes within its framework. Turning a lot of business aspects electronic, especially in government, will accelerate certain processes, which are sometimes unnecessarily tedious.

As mentioned in the overview, the Department of Communication planned to finalise a white paper on e-commerce in the 2nd quarter of 2001 and thereafter, specific legislation in the 3rd or 4th quarter of 2001. The white paper is still not finalised and this raises the question whether the government is really committed to the process. The technological world advances at the speed of light and if the government waits too long to finalise the process, even the issues in the white paper could be outdated.

Also, the implementation of e-commerce in the private sector is growing rapidly and many policies have already been put in place by the private

sector. If a policy is eventually established, the implications are that it would require major changes in implementation in the industry.

The government will need to create a balance between implementing existing policies and those that will have a long-term beneficial effect on South Africa. Clearly there is still a long road ahead, and there still has to be a lot of debate before the government can implement its policies. However, once these are implemented, e-commerce can improve the lives of South African citizens.

8. E-government

8.1 Overview

Chambers (as cited in Van der Merwe & Janse van Vuuren, 2000: 97) says countries that do not take time now to create appropriate infrastructures to support the Internet, will find their economies plummeting in a matter of years; countries that embrace the Internet, will reap the benefits. These infrastructures include telecommunications and education (and even legislation).

Also, countries that do not train their youth in the intricacies of the Internet will experience an economic backlash resembling that experienced by countries which were reluctant to take on new technologies in the nineteenth century.

8.2 The significance of an e-government

Today's governments are moving from old economy government, organised around agencies and bureaucracies that operated like "stove pipes", to new economy government which will be organised around the functions and the needs of citizens with Information, Communication and Technology companies (ICTs) as a key enabler. Leading edge governments are structuring their Web strategies from its citizens' perspectives.

The Government Service Model will shift from the traditional relationship of a citizen integrating with a worker using the IT infrastructure in the background, invisible to the user. Instead the citizen will interact directly with the IT infrastructure and the worker will serve as a problem solver for more complex issues. Being freed from routine, repetitive tasks will allow the government worker to solve problems more effectively. Citizens will, in turn,

have more rapid results from routine transactions, as well as 24 hour 7 days a week service.

8.3 The South African e-government

The significance of the *Discussion Paper on Electronic Commerce*, and the *Green Paper on Electronic Commerce*, was that the Government recognised its responsibility to initiate the e-commerce process by moving towards facilitating an e-government.

The most significant issues regarding the establishment of an e-government was presented in the *Green Paper on Electronic Commerce*. According to the Green Paper, an electronic government can be defined as government use of information communication technologies to offer citizens and businesses the opportunity to interact and conduct business with government by using different electronic media such as telephone touch pad, fax, smart cards, self-service kiosks, and e-mail or Internet.

It is about how government organises itself: its administration, rules, regulations and frameworks set to carry out services delivery and to coordinate, communicate and integrate processes within itself (Department of Communication, 2000: 116).

One of the benefits of e-government is e-procurement. By using e-commerce applications in procurement, it has been observed that the impact on operations and service delivery will be considerable.

Given that the government is the largest purchaser of products and services to the value of more than R65 billion a year, Internet-based e-procurement solutions will present the following benefits:

- Reduced prices of materials;
- Shortened acquisition and fulfilment cycle;

- Decreased administration burdens and cost;
- Improved inventory practises; and increased control of maverick purchases (Department of Communication, 2000: 118).

To achieve e-government in the information age, a range of new frameworks and strategies across government need to be developed.

Public servants at all levels must be info-communication literate and tap the power of Information, Communication and Technology (ICT) companies to improve work processes, service delivery and teamwork. Employees need to change attitudes, and for employees to change they must understand what e-government is (Department of Communication, 2000: 120).

The government's common Information Management/ IT infrastructure also needs to be upgraded and integrated to form a coherent IT Strategy for the government. The IT systems that were developed separately by the different departments need to converge and inter connect.

8.4 Summary

There is enough buy-in at the top governmental departments to facilitate an effective e-government. Some South African government departments have already set up Web sites and employees have personal computers and connectivity to each other and globally through the Internet. Departments have separately begun projects aimed at facilitating e-government. However much still needs to be done. As a starting point, government has to articulate clear vision, mission, and goals and set up achievable targets in the e-government strategy to be developed (Department of Communication, 2000: 121).

However, a clear strategy should be put in place to determine how the various government business units should exploit IT and manage information effectively.

The biggest challenge the South African government faces is integrating its heterogeneous data sources containing vast volumes of data and to ensure that they are interoperable. It also needs to change the mindset of its employees, as it has to take into account cultural issues as well as internal policies currently governing the various departments.

If the government succeeds, it will improve public services and citizens can expect a greater access to information. The result will be a more customer service focused way in dealing with the public, which will translate into faster and cheaper service.

By moving towards an electronic service, the government will also have a more hands-on approach in the way it deals with its citizens. An e-government will also create a government that is more accountable to those who voted it into power.

9. Conclusion

The South African e-commerce market has not reached the maturity one would associate with a developed country. There needs to be a major education drive amongst consumers and businesses alike informing them of the advantages of conducting business online, and to eliminate any fears regarding security and privacy issues.

B2B commerce is poised to experience growth in the local market, provided that e-marketplace vendors take the time to educate businesses on the advantages of conducting business on the Web by using an online trading hub. Looking at B2C commerce, the South African consumer needs to be educated before online retail stores can experience viable growth.

South Africa is in the unique position to learn from the mistakes that were made by online traders that resulted into the dot bomb crash. One important lesson learnt was that a Web site has to be an extension of a traditional brick and mortar operation. The best way to succeed in the e-commerce world is for a business to utilise its Web site to get 'closer' to its customers. On the other hand, there are pure online operations that do succeed. They however, had a structured business plan that set realistic expectations on future revenue growth.

M-commerce, another important result of e-commerce trading, is set to become the best solution for South Africa to overcome the digital divide and ensure effective commerce in Africa. The m-commerce market is waiting in anticipation for the government to finalise the *Telecommunications Amendment Bill*. Once the Bill has been finalised, and Telkom is hopefully deprived of its monopolistic powers, the South African market will attract foreign investors and allow for local players to fully extend its mobile product sets.

C-commerce on the other hand, is a new concept in the South African market. Vendors therefore need to launch an education drive, to ensure customers that by sharing information with suppliers, a better profit margin could be achieved.

Lastly, one of the biggest obstacles in facilitating an e-commerce framework on par with global standards is the lack of commitment from the government. It is important to note that the South African government is not hesitant to facilitate discussion on the topic of e-commerce, but rather to finalise a structured policy and to amend legislation in this regard.

Once the government dedicates itself to finalising an e-commerce policy, it can also focus internally to build an e-government framework. This could greatly improve public services, as citizens would be able to have access to information in real time.

In conclusion, to answer the question whether the local market is ready to accept e-commerce technologies that are already widely used in global markets, the answer is 'Yes'.

South Africa, although inhibited by existing Telecommunications regulations, has the attention of foreign investors waiting for deregulation of the market. The country also has the necessary IT skills, which would enable the successful implementation of e-commerce technologies and the deployment of a sufficient infrastructure to facilitate the growth, which will then occur in the market.

10. References

Anonymous1. 2001. Aiming at a continental network. *Bday.co.za*. [Newspaper, selected stories online]. Retrieved December 4, 2001 from the World Wide Web: <http://www.bday.co.za/bday/content/direct/1,3523,825457-6132-0,00.html>.

Anonymous2. 2001. Draft Telecommunications Amendment Bill blasted. *Crn.co.za*. [Online news source]. Retrieved January 2, 2001 from the World Wide Web: <http://www.crn.co.za/pebble.asp?relid=270>

Anonymous3. 2001. Mobile technology exceeds fixed-line growth in Africa says BMI-T Africa. 2001. *BMI-T*. [BMI-T press office, press release online]. Retrieved November 9, 2001 from the World Wide Web: http://www.bmi-t.co.za/site_011001/Pressoffice/mobiletechnology.htm.

Anonymous4. 2001. SA wireless market set to grow. *BMI-T*. [BMI-T press office, press release online]. Retrieved November 9, 2001 from the World Wide Web: http://www.bmi-t.co.za/site_011001/Pressoffice/wirelessmarket.htm

Anonymous5. 2001. The Telecommunications Amendment Bill. *markotter.co.za*. [Online press office]. Retrieved January 2, 2001 from the World Wide Web: <http://www.markotter.co.za/>

Anonymous6. 2001. Vital to deliver on web promise. *Bday.co.za*. [Newspaper, selected stories online]. Retrieved December 4, 2001 from the World Wide Web: www.bday.co.za/bday/content/direct/1,3523,958887-6132-0,00html

Anonymous7. 2001. Telecommunications bill condemned. *Cooltech.co.za*. [Online news source]. Retrieved January 2, 2001 from the World Wide Web: <http://www.cooltech.iafrica.com/press/808965.htm>

Bertoldi, A. 2001. SA's embryonic e-marketplace: hewing the path to global empowerment. *JOURNAL OF CONVERGENCE | VOL 2 NO 3*. [Newspaper, selected stories online]. Retrieved December 8, from the World Wide Web: <http://www.itweb.co.za/sections/business/2001/0110251029.asp?A=CJR&S=The%20Convergence%20Journal&T=Section&O=C>.

Buhrmann, A. 2001. The B2B buzz has fizzled. *Business2.co.za*, [Online news source]. Retrieved December 8, 2001 from the World Wide Web: <http://www.business2.co.za/ebusiness/26-07-01/b2b.shtml>.

Buy, R & Rothmann, J. 2000. The Internet: an overview, In R. Buys (Ed), *Cyberlaw: the law of Internet in SA* (pp 11-36). Pretoria, SA: Van Schaik Publishers.

Cellular.co.za. 2001. Mobile statistics snapshot 12/01. *cellular.co.za*. [News source, online]. Perlman, L. Web corp cc. Retrieved December 3, 2001 from the World Wide Web: <http://www.cellular.co.za>.

Corrigan, S. 2001. SA e-commerce beset by misconceptions – Pastel MD. *Computingsa.co.za*. [Newspaper, selected stories online]. Retrieved October 16, 2001 from the World Wide Web: <http://www.computingsa.co.za/compsaarchive/2001/08/06/internet/ebu02.htm>

Department of Communications, Republic of South Africa. 1999. *Discussion Paper on Electronic Commerce Policy*. [Online]. Retrieved August 18, 2001 from the World Wide Web: <http://www.ecomm-debate.co.za>.

Department of Communications Republic of South Africa. 2000. *A Green Paper on Electronic commerce for South Africa*. [Online]. Retrieved August 18, 2000 from the World Wide Web: <http://www.ecomm-debate.co.za>.

Dacey, L. 2001. Why are SA Investors so hostile to Internet Ventures?, In C. Gibbons (Ed), *The Future of e-Business Volume 1* (pp 17-18). Rivonia: Future Publishers.

Eedes, J. 2001. Devices and software not always user friendly. In M. Bidoli (Ed), *Financial Mail Survey IT 2002* (pp12-14). Johannesburg: BDFM Publishers

Eglash, J. 2001. *How to Write a .com Business Plan*. New York: McGraw – Hill.

Groenewald, M. 2000. Towards an electronic commerce policy for South Africa, In R. Buys (Ed), *Cyberlaw: the law of Internet in SA* (pp97-112). Pretoria, SA: Van Schaik Publishers.

Goldstuck, A. 2001. Mobile commerce is about no-nonsense needs. *Cooltech.co.za*. [Online news source]. Retrieved January 2, 2001 from the World Wide Web: <http://cooltech.iafrica.com/cellularfeature/>.

Harris, L. 2001. B2B starts to reshape South African Businesses. In C. Gibbons (Ed), *The Future of e-Business Volume 1* (p14). Rivonia: Future Publishers.

Heske, P. 2001. e-commerce 2001: Getting back to basics. *computingsa.co.za*. [Newspaper, selected stories online]. Retrieved October 16, 2001 from the World Wide Web: <http://www.computingsa.co.za/2001/02/26/Feature/fea01.htm>.

Manson, H. 2001. Market sentiment led to companies turning from B2C commerce to B2B. *mediatoolbox.co.za*. [Online news source]. Retrieved December 8, 2001 from the World Wide Web:
<http://www.mediatoolbox.co.za/pebble.asp?relid=2732&p=54>.

Matthews, J. 2001. The 3Cs: Key to e-commerce success. *Computingsa.co.za*. [Newspaper, selected stories online]. Retrieved October 16, 2001 from the World Wide Web:
<http://www.computingSa.co.za/compSaarchive/2001/02/26/feature/fea09.htm>.

Ord, J. 2001. Ord's plan to survive the dotbomb aftershocks. *Suntimes.co.za*. [Newspaper, selected stories online]. Retrieved May 7, 2001 from the World Wide Web:
<http://www.suntimes.co.za/2001/04/01/business/columns/columns6.htm>.

PricewaterhouseCoopers. 2000. E-privacy solutions: bridging the B2C divide. *Pricewaterhousecoopers.co.za*. [PricewaterhouseCoopers press office online]. Retrieved August 18, 2001, from the World Wide Web:
<http://www.pwcglobal.com/extweb/ncpressreleases/>

Roussouw, M. 2001. Collaboration and Partnerships to Ensure Successful C-Commerce. *Esoftworx.co.za*. [Online press office] Retrieved October 15, 2001 from the World Wide Web: <http://www.esoftworx.co.za>.

Solomon, E. 2001. Death of e-commerce, birth of c-commerce? *Business2.co.za*. [Online news source]. Retrieved October 7, 2001 from the

World Wide Web: <http://www.business2.co.za/ebusiness/07-08-01/newclothes.shtml>.

Teijken, R. 2001. C-Commerce: Collaboration with Strategic Trading partners will break down Supply Chain Barriers. *Esoftworx.co.za*. [Online press office] Retrieved October 15, 2001 from the World Wide Web: <http://www.esoftworx.co.za>.

Text 100. 2001. Kalahari.net flourishing in e-commerce 'desert'. *Mg.co.za*. [Newspaper, selected stories online]. Retrieved December 4, 2001 from the World Wide Web: www.mg.co.za/pc/2001/05/0705_kalahari.htm.

Van der Merwe & Janse van Vuuren. 2000. Internet Contracts, In R. Buys (Ed), *Cyberlaw: the law of Internet in SA* (pp155-189). Pretoria, SA: Van Schaik Publishers.

Whalley, P. 2001. Telecomms bill condemned. *itweb.co.za*. [online news source]. Retrieved December 8, 2001 from the World Wide Web: <http://www.itweb.co.za/sections/industryingsght/erp/whalley011002.asp?A+SCM&O=H>.

Whatis.com. 2001. Research database [Online]. Thing, L. Techtarget. Retrieved October 31, 2001 from the World Wide Web: <http://www.whatis.com/>

Worthington-Smith, R. (Ed). 2001. *The e-Business Handbook*. Cape Town: Trialogue.