

**An Examination of E-Business Adoption by
South African Companies**

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University of Natal (Durban)**

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Degree of Masters in Business Administration

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***“Great invention and I’d love to invest,
I’m just avoiding the high-tech sector right now.”***



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Executive Summary

Globally, companies are adopting electronic business to sustain their competitive advantage and to link this with their core competencies. The world, as described by Gartner, is currently in a “Trough of Disillusionment” - an area of pessimism where the perceived value of e-business are thought of not delivering sustainable value. However, challenges and opportunities exist to change this perception.

This dissertation makes a case for e-business adoption by laying out the value of e-business and discussing the components that make up e-business. Evidence exists linking e-business and competitive advantage and the degree of e-business adoption is producing shifts in the competitive landscape, thereby becoming an integral part of business activities across the world.

Literature research is presented, making a case for adoption of e-business and its role in sustainable competitive advantage. The case therefore can also be made for South African companies and their e-readiness can be determined. The dissertation then proceeds to examine the adoption of e-business by South African companies, looking at their readiness and making conclusions based on various criteria such as market segmentation, company size and so forth.

Qualitative and quantitative research is presented in the form of secondary data from reputable sources and is discussed as and when presented. Evidence of IT contribution to competitive advantage is presented and the concept of the *Intelligent Enterprise* is introduced.

International e-commerce trends are discussed along with Gartner's Net Liberalised Organisations (NLO) and the specific components making up e-business, such as supply chain management, business intelligence, enterprise resource planning, infrastructure, intermediation and customer relationship management, are examined in order to determine adoption levels in these technologies and business enablers.

The dissertation goes on to examine South African B2B adoption trends focusing on e-commerce enabling technologies and components as a function of company size. Implementations, solutions and obstacles are presented and discussed.



Closer examination of corporate IT trends for certain industry segments is evaluated with the primary focus on enterprise software application implementation phases. This is an exhaustive look at implementation of tools ranging from CRM through to portal technologies and network security.

Next the penetration levels of enterprise applications for various vertical industries are looked into, as well as the degree of penetration propensity as a gauge of trends. Obstacles to e-business, Internet connectivity and the effects of IT budgets on adoption are examined. Future trends are discussed during these chapters.

Internet based B2B exchanges and offerings (both vertical and functional or hub exchanges) have been researched in various industry sectors. These are presented and conclusions drawn as to the positioning of these exchanges in the South African marketplace.

Finally, recommendations, trends, conclusions and future predictions are presented along with the challenges that the marketplace (both small and large company size segments), is facing.



Chapter 1: Introduction

1.1 BACKGROUND AND CONTEXT

We are living in a period of change where the Internet and electronic networks are governing the rules on how to build companies, marketplaces and value. The Internet is becoming deeply routed into the economy; fundamentally altering the way businesses trade and collaborate. In many ways the rules are being re-written, especially since the hype period of 1999/2000 where unrealistic optimism and benefits of the revolutionary nature of the Internet were a norm. This irrational exuberance was fuelled in part by Metcalfe's Law, which overstated the business potential founded on the sales driven business model of economies of scale promised by interconnectivity.

This was not the only area of failure. Implementation challenges involving delivery systems and technological innovation were not in place to support the move towards on-line business models requiring the interaction of the full value chain, a human resource system, management information systems, physical and information-based assets for content and customer behavioural data, payment and billing processing and customer support handling. All these processes, whether offered by a single company or an interaction of companies, drive customer value. Consequently, IT implementation is at the core of new strategy processes.

Over the last two years, the global IT market has been moving away from technology driven sales towards business solutions sales. South Africa is no exception¹.

Although the dot-bomb era is still with us, the Internet is constantly transforming the way we do business both internally and externally in the business environment. While investment in some areas and industry segments have slowed down significantly, there is global evidence that there are many companies wanting to cut costs and get closer to their customers and are therefore using the Internet as a technology lever to achieve these (Skinner, 2001).

¹ Kolb C., Moller D., **South African Corporate IT User Trends**, BMI TechKnowledge Group, Report ES/201, 2002.



Companies across the world are still adopting e-business as a means to stay and/or become competitive. The barriers to adopting Internet-based business practices are lowering and the intent to integrate the Internet into all core areas of a business has never been as important as it is today. Thompson and Strickland (2001) claim that in the years to come, companies will make Internet technology a core part of their business so much so that the distinction between e-business and traditional business will become non-existent.

Hamel and Prahalad, who made famous the concept of core competencies, indicate that as global competition grows more complex and volatile at times, so there is the need for companies to integrate their core competencies with the capabilities that the e-commerce can offer in order to create sustainable competitive advantage. Long and Vickers-Koch (1998) acknowledge that linking core competencies (special knowledge, skills and technological know-how) with strategic processes, have high value to customers and stakeholders. These skills and systems need to be nurtured.

The first generation of electronic business was like a gold rush with web-presence being the pre-dominant sales channel promising great returns. The hype that followed was aimed mainly at the business-to-consumer (B2C) market and focused little on the entire value chain of business. Not to say that this was ignored, but in true consumerism fashion, the trend was to follow the money and the consumer was essentially seen as having all the purchasing power and therefore, e-commerce was driven by e-sales. If the initial hype was exaggerated then the disillusionment that followed was even greater. The Gartner Group (2001) predicts that a true e-business model will eventually emerge and that by 2008, the "e" will be dropped, making electronic business part of normal business, supporting Thompson and Strickland.

Where are we now in terms of e-business and what value can be derived from it? According to The Gartner Group and their much publicised Gartner Hype Curve, 2002/2003 falls within an timeframe known as the "Trough of Disillusionment", where pessimism is at its highest and where perceived value of e-commerce and its associated technologies are thought of as not delivering much sustainable value.



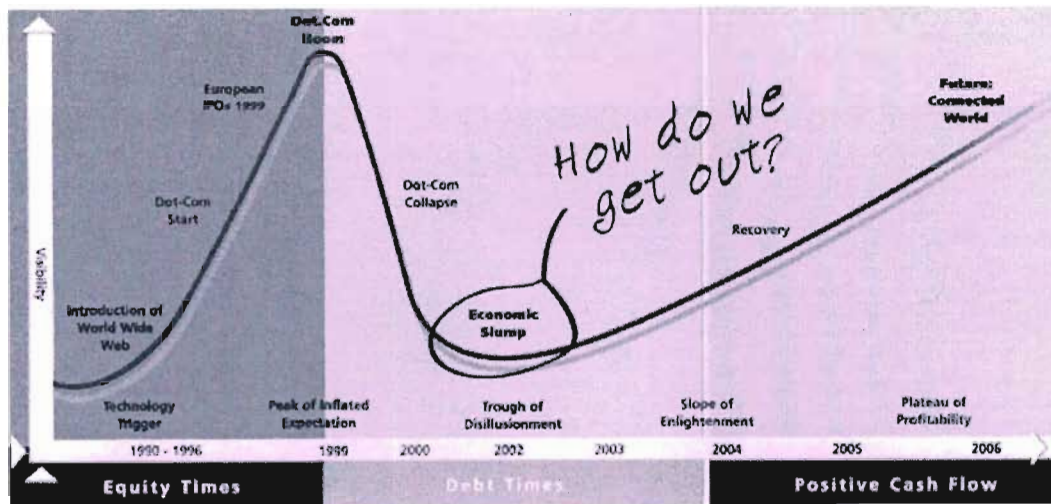


Figure 1: Gartner Hype Cycle (Source: Gartner Group)

Frost and Strauss (2001) acknowledge that the e-business environment is both challenging and filled with opportunities. Shorter product life cycles and increasingly fragmented markets are the result of increased global competition and dispersed markets. The lack of consistent rules and policies are hampering development. The focus during this phase of the Gartner Group Hype curve is on the B2B arena as over half of all e-commerce occurs in this market segment (Frost, Strauss, 2001).

Cisco (Greenaway, 2002), the world's leader in networking equipment, claims that there has been a shift from a business model focused primarily on the business-to-consumer market segment, to an Internet value proposition based on information sharing, communication, increased productivity, lowering of costs, market reach and new business opportunities. Driven by globalisation, operational and management excellence, partnerships, customer care, operational support systems and back-office automation are key success factors for surviving in today's e-business environment.



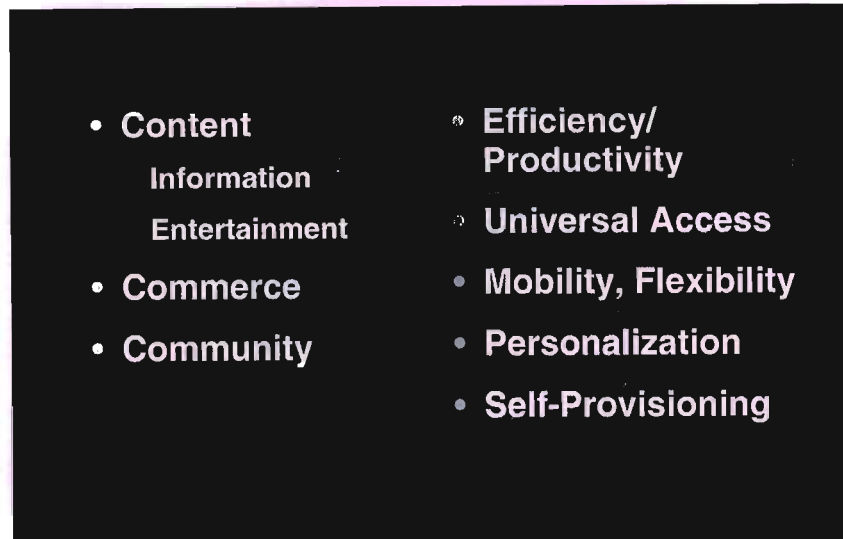


Figure 2: Internet Flexibility (Source: Cisco, 2000)

The concept that **VALUE = BENEFITS less COSTS**, is not new. E-Commerce centres on delivering value through technology-enabled mediated exchanges between parties as well as electronically based intra- or inter-organisational activities that facilitate such transactions (Rayport and Joworski, 2001). E-Business as defined by Frost and Strauss, is the aggregation of several components comprising of:

- E-Commerce (EC)
- Business Intelligence (BI)
- Customer Relationship Management (CRM)
- Supply Chain Management (SCM) and
- Enterprise Resource Management (ERP)

Traditionally, e-commerce and e-business have been used interchangeably by business, but strictly speaking, e-commerce is a sub-set of e-business. The major distinction is the business model used for e-commerce, namely, what category of e-commerce. For the purposes of this thesis topic, the focus will be on the business-to-business (B2B) market segment where e-business occurs between two organisations which include any or all of the following: purchasing and procurement, supplier and inventory management, channel management, sales activities, payment management, service and support.





Figure 3: Business-to-Business Relationships (Source: Cisco, 2000)

Application integration and B2B Internet exchange relationships are set to become an extremely important electronic marketplace for goods and services so much so that the IDC forecasts that B2B Internet Commerce will increase from \$82 billion in 2000 to \$4 trillion by 2004 world-wide representing some 86% of the e-commerce activity. For this reason, doing business on the Internet will be an important requirement for long-term success. B2B will be driven by the flow of information within the supply chain where business partners have an interest in maintaining “electronic dialogue” with their clients and suppliers.

BMI and the IDC hold the same view that there are essentially three types of B2B e-commerce models. E-Distribution is a seller-governed type of B2B where sellers dominate transactions. This is the main source of B2B e-commerce today. The converse, E-Procurement is buyer-led e-commerce and is being adopted by large organisations with an interest in keep procurement costs low. In e-Marketplaces, neither sellers nor buyers’ interests are dominant. This segment is currently the fastest growing segment of B2B e-commerce that links business interests in the buying and selling of related goods and services. The true e-Marketplace acts as an exchange or contact broker between buyers and sellers. Exchanges serve both causes of lowering costs and improving customer relationship management.

Standards are, however, a problem in the adoption of B2B and therefore are symptomatic of the lack of adoption of exchanges, but this is set to change within the

next few years with the development of extensible mark-up language (XML) and other industry standards whether private or publicly motivated.

According to the Meta Group, during 2002/3, web services infrastructure will be used for integration within the enterprise and by 2004/5, standards and platforms will have matured sufficiently to enable broad web services based on B2B collaboration.

The importance of e-business goes beyond the domestic economy, and is influenced by how companies operate in a global environment. With the reality that South Africa is part of the global village, any e-business strategy that is not aligned with some form of global framework will be found lacking. The shrinking of distance and the speed of communication of goods, services and information, are completely transformed by e-business.

1.2 PROBLEM STATEMENT AND OBJECTIVES

The level of e-business adoption in South Africa by companies together with the repositioning of e-commerce initiatives will form a crucial role in this country's global competitiveness. Literature research indicates that the growing use of e-commerce technology is producing shifts in the competitive landscape (Thompson and Strickland, 2001) and that competitive advantage is be enabled by embracing Internet technologies (Porter, 2001).

Deloitte Research (2000) claims that Internet exchanges have the potential to reduce costs and enhance company capabilities and that the slowdown in the B2C space will accelerate the overall use of e-Marketplaces or business-to-business (B2B). Deloitte also claims that real Internet value lies in the leveraging of e-Marketplaces in order to maximise benefits across the value chain and geographies. Collaboration and industry transformation is required to deliver core value to members in the e-Marketplace requiring further the integration of people and processes. An international survey conducted by Deloitte indicates that 75% of B2B market participants believe value chain improvements will be their biggest area of savings and that the value proposition will attract buyers and sellers and eventually gain critical mass, flexibility and liquidity.



PriceWaterhouseCoopers (PWC) claims that IT is no longer a back-office support system, but a crucial component of the deliver of goods and services. IT is an integral component of a company's product offering and therefore an important competitive advantage.

Lawrence et al (2002) also acknowledges that e-commerce and e-business have become an integral and growing part of business activity across the world. The importance of competitive advantage and the need for organisations to become more strategic has re-focused e-business on the importance of building customer relationships and improving supply chain management, which are relationship and process oriented.

The literature research that follows makes a strong case for the adoption of e-commerce by South African companies and the establishment of Internet ready organisations with an appropriate e-business architecture that support business goals.

As a result, the objective of this thesis is to provide quantitative and qualitative information from various sources of global and South African e-business activities. Focus is on the B2B space. This triangulation approach will determine the current adoption and trends of e-business in South Africa from which future competitiveness can then be assessed.

1.3 STRUCTURE OF DISSERTATION AND RESEARCH METHODOLOGY

The objective of this dissertation is to determine the adoption of e-commerce by South African companies. Due to the broad nature of this topic, the focus will be on the more on the business-to-business inter-organisational environment (B2B).

The objectives and problem statement have introduced the importance of e-commerce adoption to competitive advantage. Qualitative and quantitative research is presented, to determine the adoption of Internet technologies and B2B adoption in South Africa.

Secondary data from various reputable sources have been found and are presented and discussed as quantitative information in determining the adoption of e-commerce in South Africa. For this reason, no formal primary research was conducted as the



scope and sample of the studies carried out where sufficient to warrant validity and reliability. Background information with regards to the source and nature of this data will be presented as discussed.

This secondary data will be examined and appropriate comments and recommendations will be made taking into consideration world trends and current information.

Various South African B2B exchanges will be introduced as these also form an integral part of the adoption of e-commerce by business. There may be other exchanges that exist or are under construction, but these were not apparent at the time.

No dissertation is complete without looking at the limitations and these are presented as and when necessary in the text. As far as possible, current information has been presented, the oldest source of secondary quantitative information dating back to around March 2001 whilst the latest information source is dated July 2002.

Finally, a conclusion is reached as to where South African business is in the adoption phase of e-commerce and opinions will be made as to the road ahead in the years to come. This dissertation is therefore a combination of qualitative and quantitative research using secondary data resulting in a triangulation research approach.



Chapter 2: Literature Review

2.1 DEFINITION OF BUSINESS-TO-BUSINESS E-COMMERCE

Business-to-business (B2B) e-commerce is defined as commerce conducted between businesses over an Intranet, Extranet or Internet (i.e. any IP network). This business can be conducted between a business and its supply chain as well as other business end customers².

B2B e-commerce may be conducted directly between buyer and seller or through a third party such as an online intermediary or public or private exchange.

2.2 E-MARKETPLACES – THE CHANGING FACE OF BUSINESS

The Internet still presents a challenge to business forcing them to look into new strategies in an ever-changing technological and economic environment. Lawrence et al (2002, pp.362-335) acknowledge that the main drivers in the business acceptance and uptake of Internet based commerce are globalisation, convergence of media and communications technologies, increased awareness and use of Internet tools and that Internet based interfaces have become easier to use.

Ernest & Young and Cap Gemini collaborated on a research initiative to address the blurring of communications, entertainment and enabling technologies. The following are some of their findings and conclusions:

- Widespread broadband access will combine with competitiveness to reshape the communications industry.
- Content producers will find new revenue opportunities.
- Four common challenges are faced by all players namely; battle for skills, corporate agility, focus on customer retention and collaboration and improving operational support.
- Content packagers will emerge as pivotal point of value creation.

² Skinner S., Business-to-Business E-Commerce: An Investment Perspective, www.durlacher.com, 2001



- Implementation has been challenged by lack of skills, execution of business plans and models, collaboration with customers, strategic alliances and the creation of a flexible organisation.

It is clear from this that merely putting together a solution that has no focus and strategic alignment with the business plan is a model waiting to fail.

E-Business is an attraction for businesses. Andy Kyte¹⁴ from Gartner cautions that a holistic strategy must be developed when considering an e-strategy. There are three factors that Kyte considers fundamental to an e-commerce implementation and which are B2B drivers are:

- *Globalisation.* Markets, competition and capital are global and have been driven by international political forces. Therefore any ICT implementation must consider global standards and be ready to be integrated with systems anywhere in the world. This point alone calls for international standards to facilitate e-commerce communication, something that XML standards are trying to achieve. This concept is linked to the development of Extranets linking customers, suppliers and companies with one another across a digital platform.
- *Virtualisation.* The workplace and work experience is changing. Focus should not only be on external communication systems, but internal ones as well. The use of Intranets and internal communications systems will determine how effective the organisation can communicate with itself and invariably with the outside world as well.
- *Transparency.* In the networked economy, companies will become increasingly transparent to all the stakeholders, but at the same time, the enterprise must integrate security measures into their solutions.

Gartner Research describes the big difference introduced by B2B as the rise in “marketplace intermediate” relationships where partner involvement is important for success. E-Business services will range from procurement and sales, market intelligence, knowledge worker collaboration, supply chain management and customer relationship management.



2.3 WEB ADOPTION AND ITS IMPORTANCE FOR BUSINESSES

Emerging trends in managing Internet commerce technologies indicate that electronically networking customers, suppliers and partners is growing (Lawrence et al, 2002), thereby forcing companies to transform their business strategies and business models. Market channels are being re-defined due to disintermediation (Frost and Strauss, 2002) and customer relationship management is becoming increasingly real-time and interactive. As a result, the balance of power is shifting towards the customer in the quest for fulfilment.

A World IT Strategy Census (ref. Figure 4) depicts the importance of IT to organisations. Relationship management and improving supply chain management are the main contributors fostering competitive advantage. Reading into the figures, the glaring reality is that companies around the world have identified customer relationship management (SCM), supply chain management (SCM), reduction of operational costs, exploitation of new technologies and improving IT systems as top contributions to competitiveness. The implementation of IT supports better management and decision-making processes, so much so that it is widely accepted that business is entering the era of the “*Intelligent Enterprise.*”

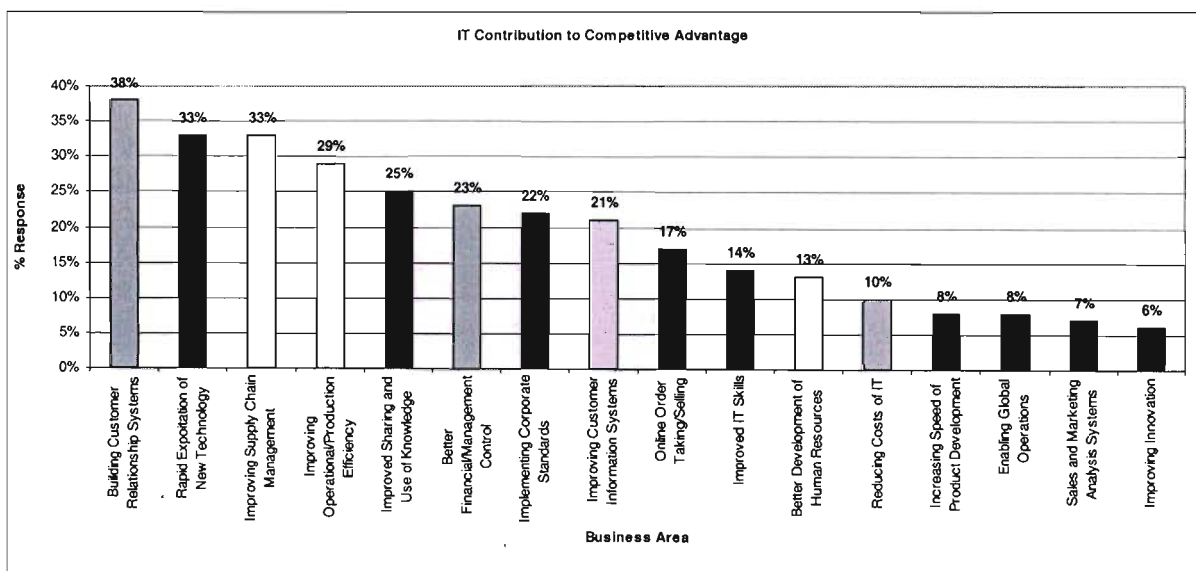


Figure 4: IT Contribution to Competitive Advantage (Source: Compass World IT Strategy Census 2000)

Knowledge and information based transactions are becoming increasingly important for competitive advantage requiring a clear understanding of e-commerce architecture in the intelligent enterprise to support the business goals. “Internet



readiness” requires an architectural platform that encompasses a standards-based, enterprise-wide technology platform, on top of which the organisation can deploy a variety of value-added applications and networks.”

In the business world, technology must be leveraged to create *business value*. Key components of effective e-commerce enablers, according to Lawrence et al (2002), are the integration management of technology into businesses, enabling flexibility of technology and establishing standards.

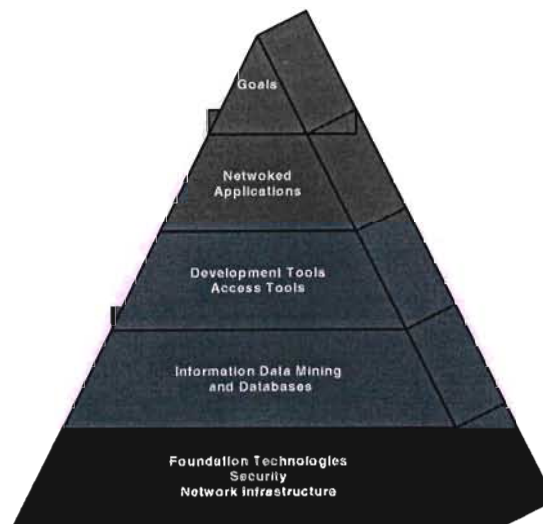


Figure 5: E-Business Architecture (Source: Lawrence et al, 2002)

E-business also necessitates new strategies and focus:

- *Communication with customers.* This concept is not new, but with the facilitation that customer relationship management (CRM) platforms offer, this is fast becoming a business imperative and not a “nice to have” option.
- *Providing service and support.* Time and fulfilment are the crucial measures of success here. Back-office systems integrated to ERP systems and CRM platforms are necessary for trouble-free and short time responses to customer queries and service.
- *Communication with prospects.* With the adoption of e-commerce, different suppliers and customers can be inter-connected.
- *Internal communications.* Adoption of Intranets can make internal communication transparent and therefore facilitate better business and improved productivity.



2.4 INTERNATIONAL E-COMMERCE TRENDS

A Morgan Stanley web survey³ in June 2001 (refer to Figure 6) comprising of 605 companies across various vertical and service industries, revealed some interesting information:

- The majority of e-commerce projects have either been slowed or scaled down as a result general economic slowdown.
- 69% of respondents agreed that connecting with SUPPLIERS online was an organisational priority.
- 63% of respondents said that connecting with CUSTOMERS was their top priority while a further 28% said that it was a high priority. Therefore, 91% of the respondents agreed that connecting to customers was important.
- Interestingly from the above information, higher priority is placed in connecting to customers than suppliers, emphasising the importance of customer relationship management.
- B2B strategies for participating in marketplaces varied.
 - 35% said that are involved in PRIVATE market places indicating use of private exchanges.
 - 29% said that they are involved in PUBLIC exchanges.
 - The remainder of the respondents (36%) do not use either. This represented a large untapped market.
- 69% intended to be able to accept orders over the Internet within one year.
- Only 47% had any direct online connection or any kind to SUPPLIERS for communicating orders whilst the figure was a little higher for accepting orders from CUSTOMERS (51%)
- With regards to online catalogues, 46% of respondents did not have or did not find it necessary to have online catalogues, whilst only 28% accepted orders from catalogues.
- Asked whether companies are being asked to participate in e-commerce initiatives as either suppliers or customers, in general 42% of respondents replied that the their customers where interested in their participation vs. 38% of their suppliers that wanting them to participate in e-commerce. Again, this indicates a higher demand by customers from companies to participate in e-commerce.
- Only 21% implemented customer relationship management software.

³ Phillips C., E-Commerce Trends, Morgan Stanley: Web Survey, 2001



- Only 26% have implemented supply chain management software.
- 40% of respondents would consider supply chain applications hosted by an application service provider (ASP), whilst the remainder would not consider it. A fairly large percentage (14%) did not know, indicating a lack of knowledge.
- From the above, the main reason for unwillingness to use ASP services was largely due to concerns about:
 - Privacy
 - Performance
 - Trust – controlling a key competitive advantage
 - Not a financially viable alternative

International Trends	Response
Online SUPPLIER Connectivity Priority	69%
Online CUSTOMER Connectivity Priority	63%
Involved in PRIVATE Marketplace Exchanges	35%
Involved in PUBLIC Marketplace Exchanges	29%
Do not use any Marketplace Exchanges	36%
Internet Ordering Capabilities	69%
SUPPLIER Connectivity	47%
CUSTOMER Connectivity	51%
CRM Implementation	21%
SCM Implementation	26%
Willingness to use an Application Service Provider (ASP)	40%

Table 1: International E-Commerce Trends (Source: Morgan Stanley, 2001)

The above is presented for benchmarking purposes, and when quantitative information based on the South African market, comparisons will then be made.



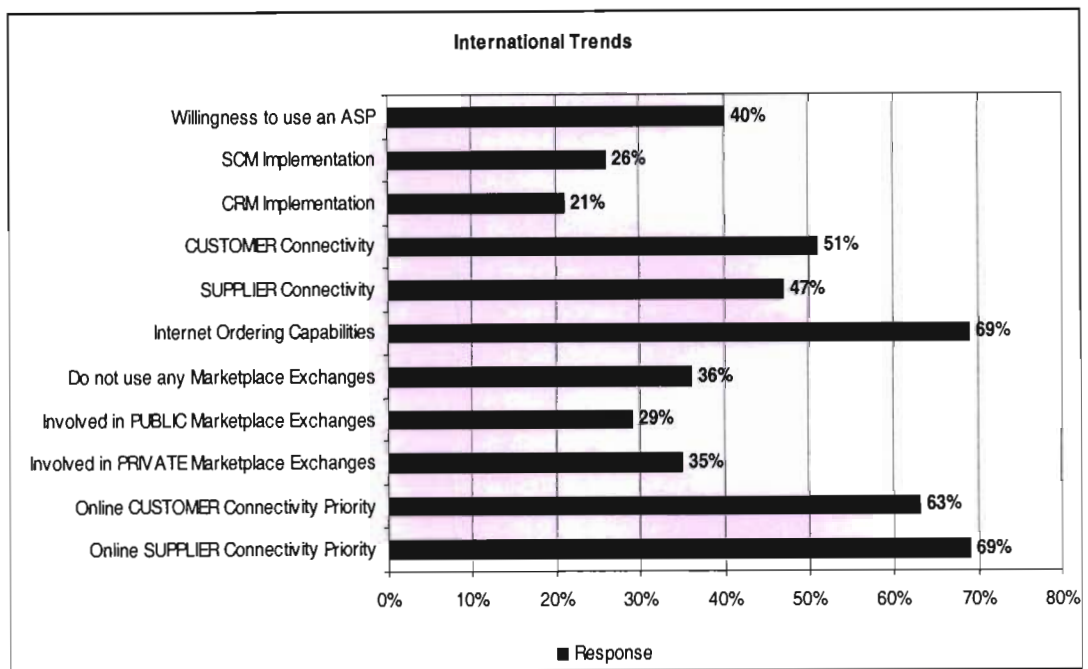


Figure 6: International E-Commerce Trends (Source: Morgan Stanley, 2001)

Gartner Research⁴ claims that B2B sales transactions will account for approximately 70% of total e-business revenue by 2004. The business environment will evolve into what Gartner has termed a “*Net Liberated Organisation*” by continuously re-evaluating its business processes, its value chain relationships or partnerships and its business models. Gartner however, indicates that the greatest challenge to any e-business infrastructure development is privacy, which concurs with the study done by Morgan Stanley. Trust is central to any business relationship. Customer profiling, application service providers and operations are only a few areas at risk, not to mention competitive advantage.

Gartner also indicates that when looking at infrastructure, IT investments must be aligned with business strategy and that the Chief Information Officer (CIO) needs to be a key player in the business and infrastructure decisions. The technology strategy needs to focus on the key areas of building competencies in application integration and strategic outsourcing.

The move to a Net Liberated Organisation⁵ (NLO) is based on the driving assumption that operating costs in these organisations will drop anywhere between 25 to 50

⁴ Mahoney J., Industry Trends and Directions Scenario, Gartner Symposium: ITxpo Africa 2001.

⁵ Flint D., *Net-Liberated Processes*, Gartner Symposium: ITxpo Africa, 2001



percent. Customer relationship management process will become increasingly important with businesses having to go beyond simple order acknowledgement and move towards a holistic approach to customer fulfilment.

The use of B2B exchanges will go beyond the mere linking of enterprise resource planning systems (ERP) and supply chain management systems (SCM), but will involve higher levels of collaborative processes and use of knowledge workers interacting with one another in the knowledge value chain. This can be seen where organisations come together to form private exchanges for the mutual benefit of all the trading partners, even though some may be competitors. The cost reduction benefits have been identified as the main driver of this form of collaboration.

2.5 SUPPLY CHAIN MANAGEMENT (SCM):

Supply chain management allows a company to improve its competitive position by lowering costs and accelerating the time-to-market of new products. Rayport and Jaworski (2001) note that sales are now more customer driven as demand has shifted from “push to pull models.” with increased customisation. The creation of supply chain partnerships, have emerged with e-commerce technology as an enabler. The main focus of SCM is on automating order-acquisition functions and in so-doing, aid the company in order fulfilment. Productivity and effectiveness increase as a result of SCM implementation (Rayport and Jaworski, 2001).

On the e-procurement side, efficiency and effectiveness are improved as a result of reducing costs and having better control of the supply chain. Better purchasing decisions can be made with less maverick style purchasing methods and in turn higher integration of procurement functions with back-office systems.

With enhanced digital communication across platforms, information sharing in real time across various digital relationships connecting entire companies via business-to-business processes is more complex.

According to Hajibashi and Brooks (2001), as more companies recognise the value of communicating with partners, electronic data interchange (EDI) will become an important communication mechanism. The challenge comes in the B2B integration solution in developing electronic Hubs and e-Marketplaces that will rely on a



combination of standards within industries (vertical supply chains) and eHubs or functional hubs (horizontal supply chains) across standards. In order to do this, digital standards between trading partners need to be integrated and in so doing, an open integration architecture will grow with the technology evolution. Companies themselves need to accommodate multiple standards if they choose to reach across vertical industries into the functional hub arena. If not, operating under a set of standards for a particular industry will be sufficient for communication within those verticals.

E-business is a key supply chain integrator across a wide range of industries in that E-business provides a means to put into practice many of the features and principles of SCM, but more effectively. Lee and Whang⁶ (2001) indicate that, "businesses can use the Internet to gain global visibility across their extended network of trading partners and help them respond quickly to a range of variables, from customer demand to resource shortages". Adoption of e-business can lead to benefits of supply chain integration in reducing costs, increasing organisational flexibility, improving response times and in general, assist the organisation in becoming more effective.

Integration cannot be completed without linking relationships between companies. The fundamental key to success here is co-operation between supply chain members requiring application integration, information integration via electronic means and workflow co-ordination.

2.6 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

CRM strategy (customer relationship management) in recent years has undergone remodelling as a result of Internet technologies. The more significant change has been the shift from client/server architecture to either pure web-based solutions or a combination of client/server/web-based platforms. Consequently, the definition of CRM and functionality has changed.

CRM is now seen as a means to support the acquisition, retention and management of customers. CRM supports sales and marketing, and with interfaces to enterprise

⁶ Lee H.L. and Whang S., E-Business and Supply Chain Integration, Stanford Global Supply Chain Management Forum, Document Number SGSCCMF-W2_2001, 2001



resource planning (ERP) systems, CRM also supports accounting, HR, payroll and inventory management functions.

Internal CRM processes, example customer service and sales, are being automated. Marketing has not escaped Internet based CRM applications. Email campaigns and micro segmentation is possible, thereby increasing the marketing reach with specific content.

CRM is more than an application technology solution; it is part and parcel of corporate strategy. The general trend is not to use CRM solutions as differentiators, but rather as a means to improve quality of service. Du Plessis and Kolb acknowledge - "taking better care of customers is translating into increasing profits, which is in turn driving CRM adoption." The foundations for a customer centric organisation require a unified view of the customer using personalised products and services to enhance customer support and experience. This requires an enterprise-wide view of the customer regardless of the point of interaction. CRM is a relationship building exercise.

Data warehousing technology and services to support CRM applications have, as a result, experienced significant growth. The view that CRM is a business solution required to integrate with supply chain management systems, is increasing, all in the name of improving the customer experience and to relate better to external organisations such as partners, suppliers and customers.

CRM communication channel strategy is growing in importance and is dependent on the interactive types of communication especially with newer types of Internet dependent technologies now available (Du Plessis and Kolb, 2001). The following are communications channels available:

- Direct Mail
- Email
- Internet/Web Access
- Advertising
- Branch or Store Communications
- Direct Sales
- Telemarketing
- Inbound Call Centre



- Conferences and Events
- Mobile Devices
- PABX

2.7 E-BUSINESS INFRASTRUCTURE AND APPLICATION INTEGRATION

Lawrence et al (2002) supports that the effectiveness of organisations cannot in an e-commerce environment consider internal factors such as achieving efficiencies and cost reductions. The entire supply chain relationship needs to be examined in order for the organisation to be competitive globally. This follows on from the findings of Lee and Whang in that sharing of information is crucial for supply chain management to succeed.

SCM requires that companies be able to control stock levels better, provide the customer with more variety and choice, that product and services can be delivered in a short a time as possible and customer satisfaction is maintained. This requires an efficient mechanism to exist whereby collaboration between the supply chain role-players sharing data so that effective planning can be achieved producing greater market sensitivity.

There are, however, risks associated in sharing information with the role-players in the market, and not only with members of the supply chain. Factors such as secure B2B communications, performance, privacy can be achieved using VPN structures based on IPSEC protocols, an industry standard mechanism for secure communication.

Inter-organisational e-commerce models or B2B Internet exchanges, whether public or private, are emerging as a valuable mechanism for improving efficiency and cost effectiveness in the supply chain. The use of virtual private networks (VPNs), are increasingly becoming more important and standardisation of information formats and attributes are necessary in order to effectively promote this exchange of information. Extranets provide this mechanism for improving supply chain efficiencies and enhancing trading collaboration. According to Lawrence et al (2002), extensible mark-up language (XML) promises to be a recognised standard in the world of B2B e-commerce utilising a set of consistent components with which to



conduct B2B e-commerce on a global scale. Smaller trading partners can now participate in industry supply chains once restricted to large corporations.

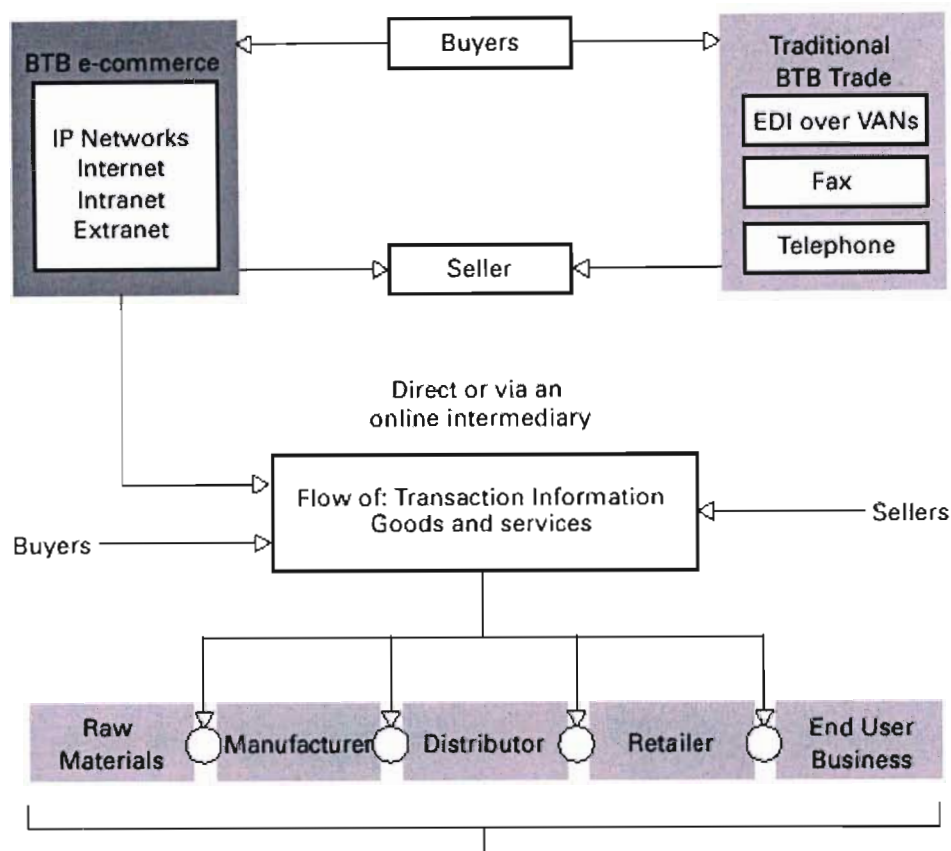
Application integration vendors are focusing on XML as a means of standardisation. The main problem with the development of XML tags or meta data is that there is a lack of industry wide standardisation. Gartner (E-Business Scenario, ITXPO 2001) claims that e-business will become normal business when every business has integrated digital technology and Internet into its operations. Through the efforts of the World Wide Web consortium (W3C), there is a considerable amount of effort in developing XML family of standards leading to XML defined application specifications. Currently, Gartner claims, there is still some ballooning of XML specifications before “synchronisation, harmonisation and vocabulary-sharing methods emerge.”

Therefore in time, XML based standards will become the industrial standards to used in the different phases of “long supply chains, leading to real supply chain management and play a major role in implementing platform independent computing.

If Gartner’s predictions are to be believed, then closer, longer-term relationships between supply chain members will become a natural evolution of e-business.

The E-Business Annual 2002 claims that enabling technologies such as XML, SOAP, instant messaging, open systems interoperability, the Internet and peer-to-peer networking all allow meaningful collaboration with internal and external communities. The same can be said for private and public B2B Internet exchanges. However, XML is seen to be the cornerstone of collaborative commerce enabling transactions between communities and integration with back-office applications based on differing technology platforms. In order for organisations to achieve significant competitive advantage in the Internet age, integration using technology as a key enabler is necessary.





Note: BTB e-commerce can be conducted at any point in the existing supply chain either to streamline existing processes or to disinter mediate parts of the process.

Figure 7: Skinner S., Business-to-Business E-Commerce: An Investment Perspective, www.durlacher.com, 2001.

The fundamental question today is whether XML standards help make the B2B connection? Establishing a truly connected relationship with suppliers or net markets has been very challenging. Philip Say (www.clickz.com) claims that the greatest source of frustration for companies attempting to establish B2B relationships has been the disparity of technical sophistication, processes and capabilities between a company and the set of trading partners.

Creating a link with suppliers is a simple enough business integration process, but the problem comes in with having to repeat the process for all suppliers with whom the company does business. Added to this are transaction vendor adopters/integrators who base effectively establishing proprietary procurement products.



Microsoft's .NET initiative aims to include a complete suite of programming products aimed at interfacing with XML. IBM has also entered the web services market by unveiling the WebSphere application server supporting JAVA and capable of connecting business applications over the Internet. With Web services supported, applications communicate through SOAP and applications are registered in a registry based on the Universal Description, Discovery and Integration standard (UDDI) thereby further enabling web services adoption.

In a B2B context, XML has become the standard by which means data is formatted for a particular industry. In this way, proprietary interfaces and changing integration requirements have fuelled the adoption of XML. However, the major challenge remains in getting total industry agreement in B2B collaboration protocols. Nevertheless, Phillip Say (www.clickz.com) expects the adoption of XML based B2B collaboration protocols to increase rapidly as companies search for lower costs of automating business processes and integrating services with partners as they adopt a give and take attitude to standards formulation.

Businesses today face a set of challenges that will ultimately define the next generation of industry leaders. Expanding customer requirements, complex supply chain relationships, increased outsourcing, and globalisation have been combined to exert increasing demands on the enterprise. To cope, companies need greater visibility into information – both upstream and downstream – and software that enables integrated and rapid response to supply chain shifts. Tomorrow's leaders will be companies that quickly and efficiently succeed in optimising the extended enterprise, turning their supply chains into their competitive advantage.

Buyers and sellers need to closely examine how public and private e-marketplaces fit into their e-commerce strategies and integrate accordingly.

The US secretary of Commerce, William Daley comments that technology is reshaping the economy and transforming businesses and consumers, so much so that it is an economic opportunity. Enterprise application integration is aimed at the planning, modernisation, consolidating and co-ordinating computer applications within an organisation. Enterprises now depend on strategic relationships with partners and suppliers to create efficient, productive supply chains requiring intra and inter-company exchange of information (Lawrence et al, 2002). Amongst these application components are,



- Cataloguing
- Order Processing
- Payment Systems
- Workflow Management
- Content Management and
- Personalisation

Cataloguing is a similar concept to mail order catalogues, whilst order processing works together with cataloguing to provide a connection to accounting systems for transaction initiation and completion. It must be noted that online transactions can be broadly classified into either Internet initiated or Internet completed, the difference being the degree of human intervention and involvement.

Workflow management refers to handling customer enquiries and regulating the flow of products from the manufacturer to customers across the supply chain. Content management comprises of infrastructure used to maintain web sites, which includes web authoring, collaboration with customers and clients and workflow management. Finally, personalisation is a strategic tool used to enhance the customer experience by improving content relevant to customers.

2.8 THE ROLE OF THE E-MARKETPLACE - INTERMEDIARIES

The major difference between Dot.coms and eMarketplaces is the role they play in the buying and selling process. Traditionally, Dot.coms were in fact retailers or resellers with fancy web based front-ends.

B2B transactions are undertaken in one of three methods:

1. Initiation by sellers
2. Initiation by buyers
3. Mediation by intermediaries e.g. brokers

Organisational relationships in the marketplace are changing and with this the way transactions are initiated by buyers and sellers. Intermediaries, because of the rapid growth of web sites and content, are increasingly supplementing transactions. Therefore, suitable partners cannot be easily located indicating that the proliferation of trading web sites has saturated the market. The eMarketplace on the other-hand,



is neither a seller or buyer, but acts as a contact broker and does not take title to the products bought or sold on the eMarketplace. In the B2C world this would equate to a consumer portal acting as an intermediary between the consumer and a dot.com.

The revenue model and the title to the products sold are the main distinction between Dot.coms. Besides not laying claim to products, eMarketplaces may charge a membership and/or transaction fee.

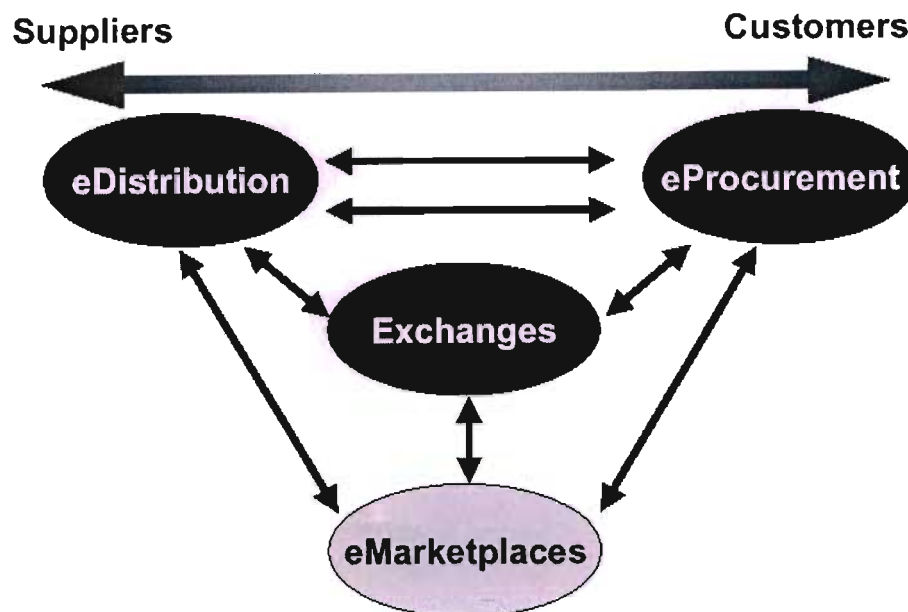


Figure 8: E-Marketplace Relationship to E-Distribution and E-Procurement
(Source: BMI-T, 2001)

Intermediaries are centred on communication, commerce and content. At this point it must be noted that there are essentially two types of eMarketplaces or Internet exchanges, namely private and public exchanges. As the names indicate, private exchanges rely on specific role-player involvement and are governed by participation rules of that exchange. Generally, private exchanges serve a specific vertical marketplace focused on reducing costs and inefficiencies a single supply chain whereas, public exchanges are open to all role-players and act as functional hubs deployed to reduce costs and address inefficiencies within multiple supply chains and processes. They provide standardised goods and services. Vertical exchanges aggregate supply and/or demand within a specific industry and add value by providing industry knowledge and cost reduction.



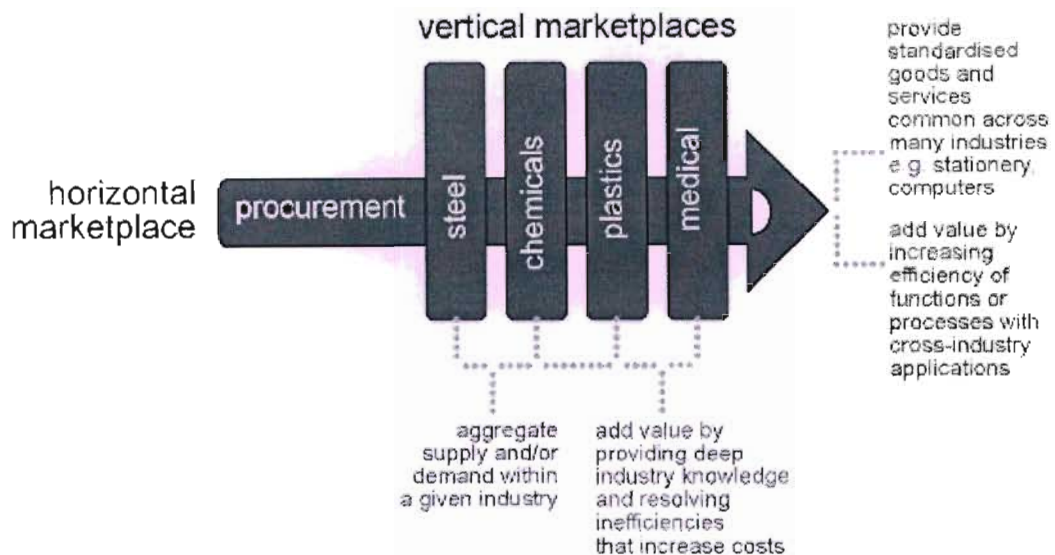


Figure 9: Combining Horizontal Services across Vertical Marketplaces (Source: Durlacher, 2001)

Functional hubs focus around processes and services and may involve trade of indirect goods. These hubs provide standard services and add value by increasing efficiencies in specific functions and processes across industries, which include:

- Asset management
- Media buying
- Maintenance, repair and operations (MRO)
- Expense management
- Shipping
- Logistics
- Human resources

In some cases, vertical and functional hubs may be integrated depending on the service offered, thereby blurring the roles. This is especially the case in MRO and service based offerings, which are common across vertical sectors e.g. MRO and financial services.



Integration of Vertical and Functional BTB hubs

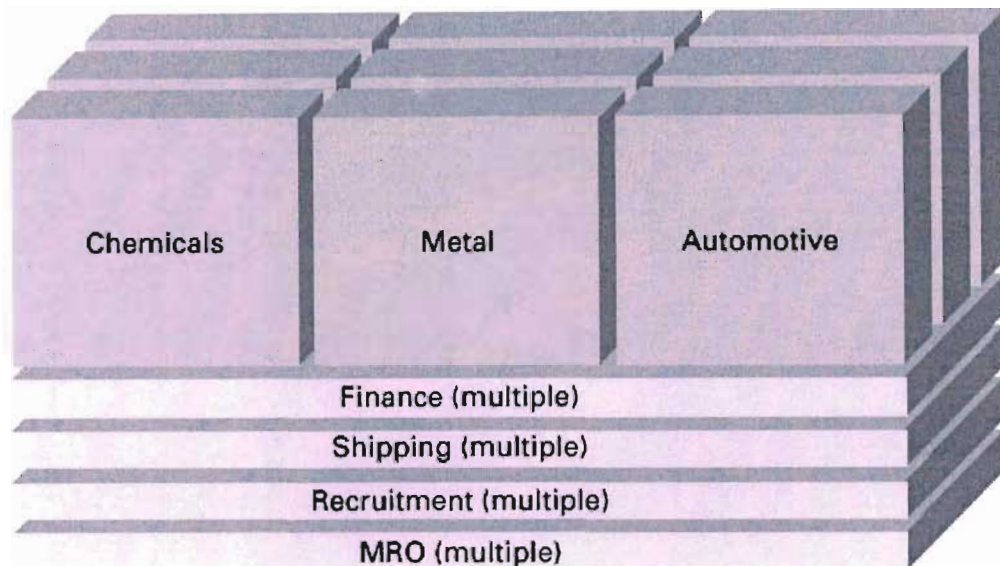


Figure 10: Integration of Vertical and Functional Hubs based on Service Offering (Source: Durlacher, 2001)

Online intermediaries have the potential to create efficient markets and are built and operated by a number of different parties including:

- Dominant industry players building closed trading communities (private exchanges)
- Industry associations and trading groups e.g. ENX a automobile network exchange
- Large distributors e.g. Chemdex
- Industry service companies e.g. financing
- System integrators e.g. EDS
- Software providers e.g. CommerceOne, Ariba
- Spin-offs or start-up companies

Durlacher believes that online intermediaries have certain characteristics that add value to the stakeholders. These include:

1. Domain expertise in given verticals must leverage business processes and determine market inefficiencies.
2. Must be able address fragmented markets.



3. Should include strategic partners to gain critical mass and credibility as well as be able to leverage technology and services that add value to the core market position.
4. Intermediaries must be available for business on a 24x7 basis. Therefore reliability is important.
5. Online trading is essentially information exchange, and this must be done in a secure and trusted environment.
6. The user interfaces must be easy to use and provide the desired functionality.
7. Intermediaries must be seen to be neutral and not represent any hidden interests or parties e.g. must not be seen to favour buyers or sellers.

eMarketplaces must persuade both suppliers and sellers to participate in the exchange and must also include a good promotional mix that is far more targeted. This focus depends on whether the exchange is targeting a niche or vertical sector or provides services across industries. Here personalisation of content and media would provide the exchange with the correct promotional strategy for the industry that it is trying to attract.

The value proposition of exchanges should not only focus on price, but also on convenience, facilitation, supply chain integration; electronic data interchange and in general act as an e-commerce enabler. BMI-T believes that intermediaries should not only concentrate on lowering prices, but should underline the lowering of costs that buyers and sellers can achieve using the eMarketplace. "Savings are achieved throughout the entire supply chain by improving administrative procedures and by exchanging information in real-time with business partners. "

This makes the supply chain more transparent and enables participants to improve production scheduling and inventory management.



Chapter 3: South African B2B Adoption Trends

All information relating to the B2B adoption trends⁷ in South Africa is secondary data. This has been sourced mostly from the IDC eWorld and BMI-T surveys done in 2001 and 2002. In South Africa there were 300 IDC respondents ranging from small, medium to large organisations and the BMI-T respondents ranged from 1000 interviews with SMEs (small and medium enterprises) and 754 interviews with mid-to-large sized companies. In order to determine adoption trends in South Africa, statistics from the survey is presented and discussed in this chapter. Other information sources are presented and discussed accordingly.

3.1 E-COMMERCE ENABLED SITES

Taking a closer look at the IDC survey, of the companies with Internet access, less than half (45%) were aware of eMarketplaces (see Figure 11). Of the participants who were aware of eMarketplaces, only 26% participated as buyers whilst 51% did not wish to participate at all. The remaining 23% expected to participate in the next 12 months. Of those aware of eMarketplaces, 25% of respondents claimed to be participating as sellers with 54% having no plans at all in the future of participating whilst 19% said that they would within 12 months. The evenness of buyers and sellers in the eMarketplace is interesting in that there is roughly the same number of buyer and seller participants. eMarketplaces traditionally favours buyers or eProcurement whereas suppliers are more hesitant towards adoption (BMI, 2001) and so it is expected that the buy-side will take the lead in eMarketplace participation. This represents an opportunity to reach companies and educate them on the benefits of participating in eMarketplaces to streamline business processes to enable greater efficiencies and cost reductions and therefore, larger profit margins.

In general 40%-45% of companies, regardless of size, believed that the Internet was suitable as a direct buying and selling channel bypassing other traditional channels. Interestingly, this is the same percentage of companies who believe that the Internet is not suitable for channel bypassing with only 10% of companies believing the

⁷ Bertoldi A., Waldeck L., B2B = "Back to Basics": The Future of B2B eMarketplaces in South Africa, BMI TechKnowledge Group, 2001.



Internet to be extremely suitable. Both the IDC and BMI-T results show a high degree of congruency.

Consequently, there is an opportunity to educate companies as to the benefits of eMarketplaces and exchanges, whether they are private or public exchanges.

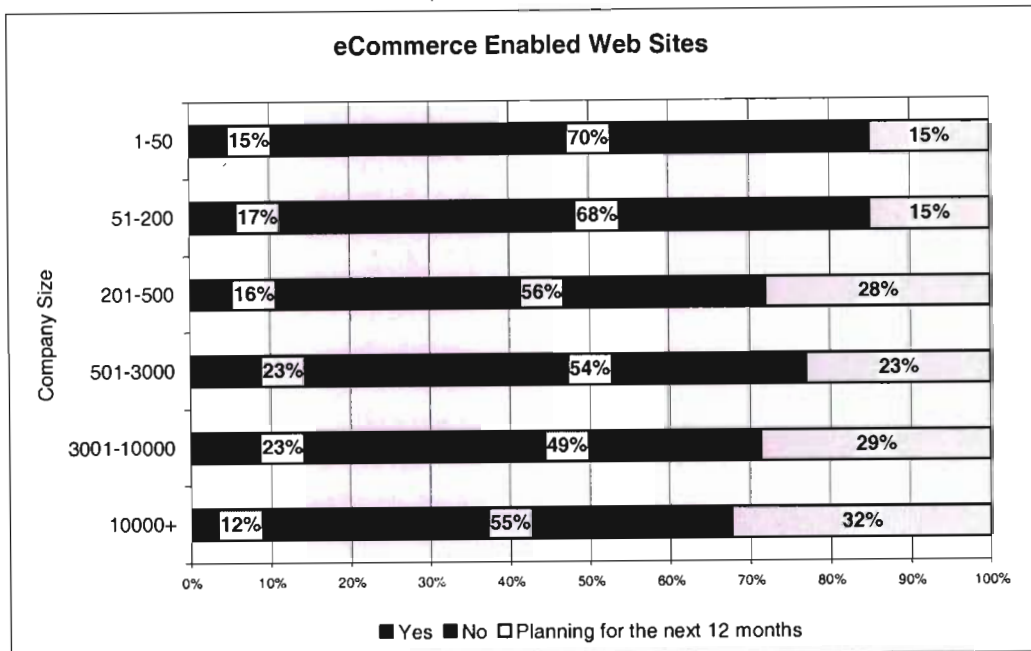


Figure 11: eCommerce Enabled Websites (Source: BMI-T, 2001)

With reference to Figure 11, the majority of companies do not have e-commerce enabled web sites. Trends indicate that the smaller the company, the less likely that they have adopted e-commerce on or will adopt in the near future.

In general, there is a low penetration and adoption of e-commerce on company web sites with an indication that there is a huge market potential for eMarketplaces. The above data also points to the relatively low level of e-commerce sophistication of South African company sites. Interestingly, it is the medium sized companies, namely those having between 500 to 10000 employees, which have the highest adoption figures. Larger companies on the other hand, are planning to be e-commerce



enabled by 2003-2004, indicating their seriousness to the technology. A quick scan of the company environment in South Africa, reveals corporate giants like Telkom, Eskom, Transnet and Transtel (all parastatals or semi-parastatals) have the employee numbers beyond 10 000.

3.2 INTERNET BASED SALES AND PROCUREMENT

Looking towards the future,

Figure 12 below indicates the planned use of the Internet as a sales system or channel and Figure 13 indicates the same for Internet based procurement.

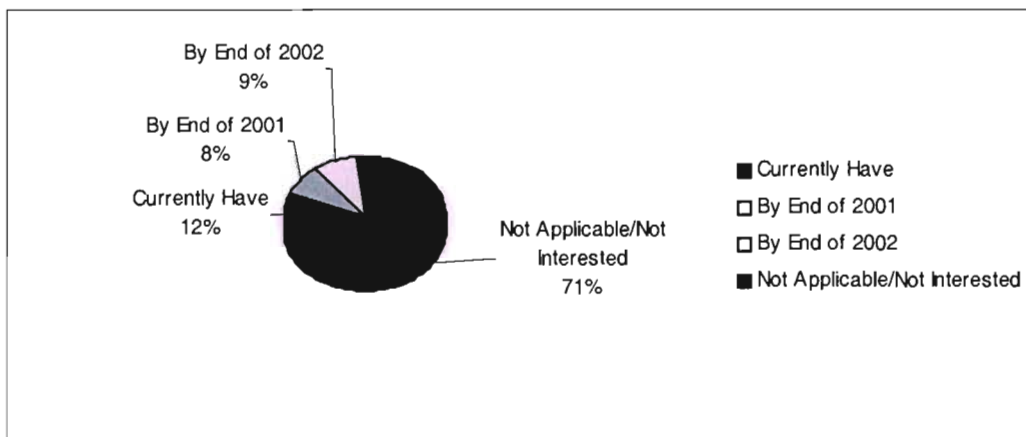


Figure 12: Internet Based Sales System (Source: BMI-T, 2001)

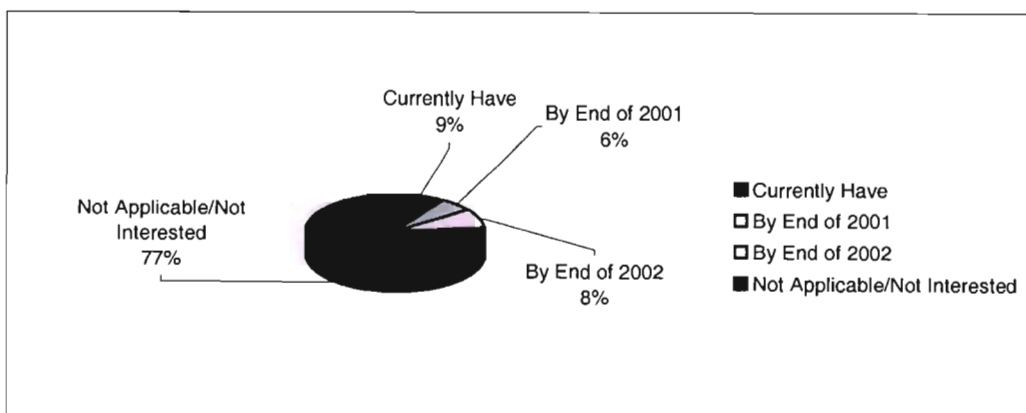


Figure 13: Internet Based Procurement System (Source: BMI-T, 2001)



The Internet based sales and procurement statistics are very similar. What is of concern though is the high percentage of companies not wanting to implement any form of e-commerce on their corporate web sites (over 70%). The importance of the data in Figure 12 and Figure 13 is that further analysis reveals that most companies will not have some form of Internet based procurement or sales system in place by end-2002. This is of concern in that the market may well want to adopt e-commerce, but that the adoption is restricted to order taking and marketing and not include e-procurement and e-sales systems as part of the implementation.

Comparing this information to Figure 11, the larger companies have given e-commerce adoption a higher priority in comparison to smaller companies. There could be several reasons for this. Firstly, cost of implementation. Smaller companies will not easily see the return on investment and do not the economies of scale to warrant such an investment. Secondly, disillusionment. South Africa is not immune from world factors and companies could be adopting a wait and see attitude. Thirdly, the lack of standards and system inter-operability could be putting many companies off implementing e-commerce systems.

Further information by BMI-T indicates that of the companies either planning or have adopted either e-procurement or e-sales, only 25% of these respondents could actually implement completed on-line transactions. The remainder 75% of companies still rely on traditional means of completing transactions.

3.3 E-COMMERCE SOLUTIONS IMPLEMENTATION

Of the companies that currently have or are planning to have e-commerce solutions by the end of 2002, Figure 14 indicates the breakdown of solutions that respondents have or will have implemented by end of 2002. The first observation is the fact that e-procurement and e-distribution (or e-sales) systems will dominate e-commerce implementation by this stage, with 66% and 85% adoption respectively. From this one can deduce that in the future, once the benefits of exchanges have been communicated, that there is potential growth for e-marketplaces.



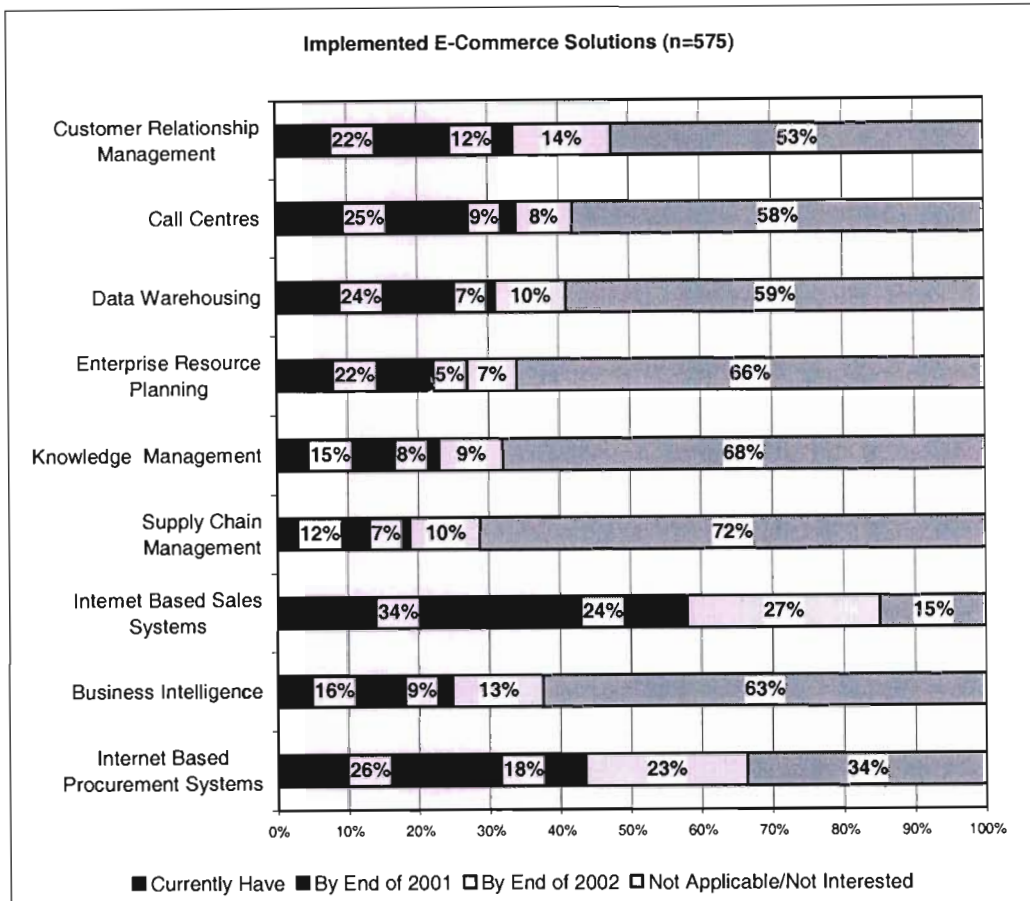


Figure 14: Implemented E-Commerce Solutions (Source: BMI-T, 2001)

Other potential areas of adoption are customer relationship management (CRM) and business intelligence (BI) emphasising the growing importance of collaboration and customer data mining. Therefore, extrapolating into the near future for 2003/2004, vendors and service providers should position themselves to offer these services. There is some reluctance to adopt supply chain management (SCM) and enterprise resource planning tools (ERP) by companies. That's not to say that there is no adoption of the technologies, but merely that companies seem to have different strategies when it comes to e-procurement and e-sales versus the adoption of an integrated SCM tool. This is a potential cause for concern in that order fulfilment may be affected as a result of a lack of system integration.



3.4 BUSINESS PRIORITIES AND OBSTACLES

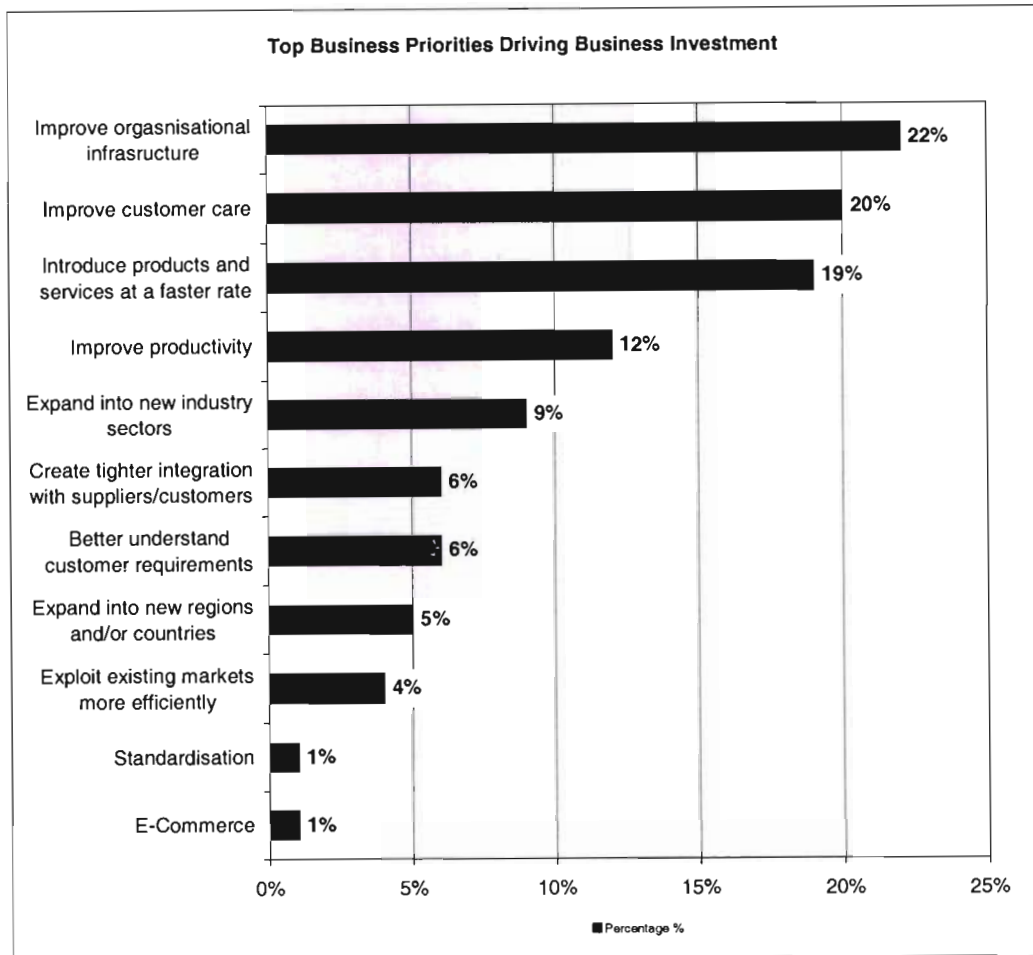


Figure 15: Top Business Priorities Driving Business Investments in IT for 2001 (Source: BMT-T, 2001)

Even though the factors vary for different industries in terms of IT investment, they share similar processes, environment and market forces. Figure 15 presents the business priorities for businesses in order to differentiate themselves from their competitors.

It would seem that the adoption of comprehensive e-commerce or B2B, is not a corporate priority and that there is little understanding of the benefits of full e-business. Improving customer care, improving productivity and product and/or service introduction are the highest priorities confirming the data in Figure 14 that CRM, SCM and ERP are current adoption favourites. These areas have been identified as providing greater business value. Improving efficiencies, realising cost



savings and better customer relationship management (customer fulfilment and retention) and building relationships across the value chain, are current priorities.

Projecting forward, it is predicted that with the advent of further ICT (Internet, communication, telecommunication) convergence and the adoption of standards for both vertical and functional trading hubs or exchanges, that SCM and will begin to dominate as the demand for seamless forward and back-ward supply chain integration increases. Integration is important and the lack of it leads to business inefficiency, poor cross-functional communication and inevitably leads to silos of information. While SCM concentrates on reducing costs, CRM focuses on the customer. Some form of integration between the two systems must take place in order for companies to differentiate themselves further.

Although priorities have been identified, obstacles exist. These are due to:

- (i) Complexity of e-commerce implementation,
- (ii) The high costs of deployment.
- (iii) A belief that e-commerce is not critical to business strategy.
- (iv) Security.
- (v) Skills.
- (vi) Infrastructure deployment.

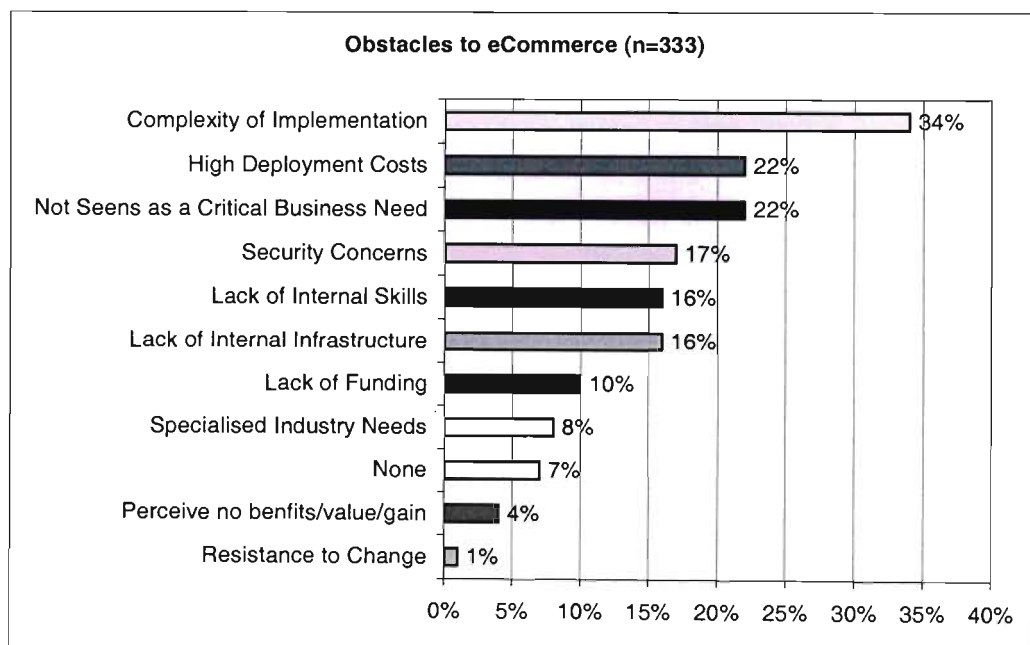


Figure 16: Obstacle to E-Commerce Adoption (Source: BMI-T, 2001)



The complex nature of implementation indicates poor migration of business to e-commerce. Carmen Whateley from Dimension Data I-Commerce Services (The E-Business Handbook, pp77-85) acknowledges that companies have a difficult time with integration. Often, leaders do not understand how e-commerce technology can be made to work and abdicate the decision-making to IT professionals who get caught up in technology issues and not the business needs. Whateley goes on to say that people are fundamental to the e-Commerce solution. Competencies and skills need to be identified and integrated into the organisation and that of the company's e-commerce partners. "The front-end clarity needs to be linked to the back-end purpose."

The high cost of deployment and that e-commerce is seen to not be part of core business, are further inhibitors. Security is a common concern whether the deployment is in the form of VPNs or extranet architectures. There is common fear that information will be leaked and in so doing, erode competitive advantage. Also, there seems to be the perception that firewalls may not offer adequate levels of protection. The fact that security technology is reliant on third party vendors does not instil further confidence.

What opportunities lie with the marketplace? The above information, especially with regards to lack of skills, infrastructure and costs, is an opportunity for application service providers (ASP) to offer e-commerce and eMarketplace services. However, the critical factor to this would be security, without which the value proposition cannot be concluded.

The suitability of the Internet as a business channel has come under some revision during the course of the last 24 months. It is being considered as more than just an information and marketing channel, but increasingly as a procurement and sourcing channel as well (Source: BMI-T). When asked how soon companies would adopt the Internet as an enterprise application integrator to conduct e-commerce between their organisations and their customers and/or suppliers (Figure 17), the number of companies could double within 1 year and within 2 years (by June 2003), approximately 80% of companies would have some form of integration completed. This reinforces the information from Figure 14, when respondents were asked to identify e-commerce solutions adoption.



3.5 INTERNET BUSINESS INVOLVEMENT

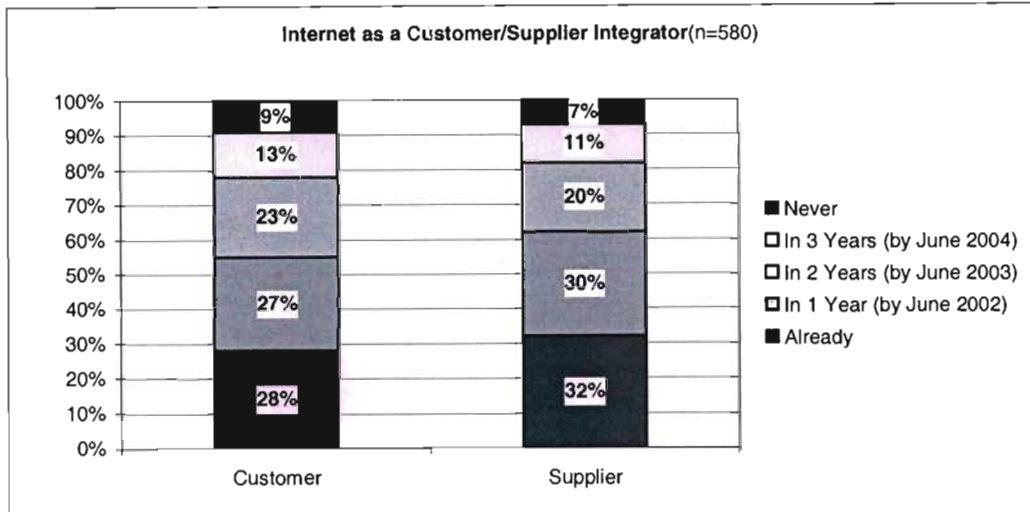


Figure 17: Internet Adoption as a Customer/Supplier Integrator (Source: BMI-T, 2001)

28% and 32% of respondents felt that the Internet was already an important vehicle for conducting e-commerce with customers and/or suppliers. Of interest is that the market could expect roughly a 20%-25% growth year-on-year until mid-2004 representing a huge business opportunity for the vendor market.

Figure 18 provides insight as to the nature of the business activity amongst respondents that have or are planning to have Internet-based sales or procurement. There seems to be a higher number of suppliers, indicating e-procurement is important. From the data, there is not a high level of digitisation of products or services and it would also seem that roughly 50% of companies are actively pursuing placing their products/services on the Internet in some form or other. Therefore cataloguing and active e-commerce participation by companies is currently low with only 34% of companies having effectively "digitised" their products or services as of June 2001.



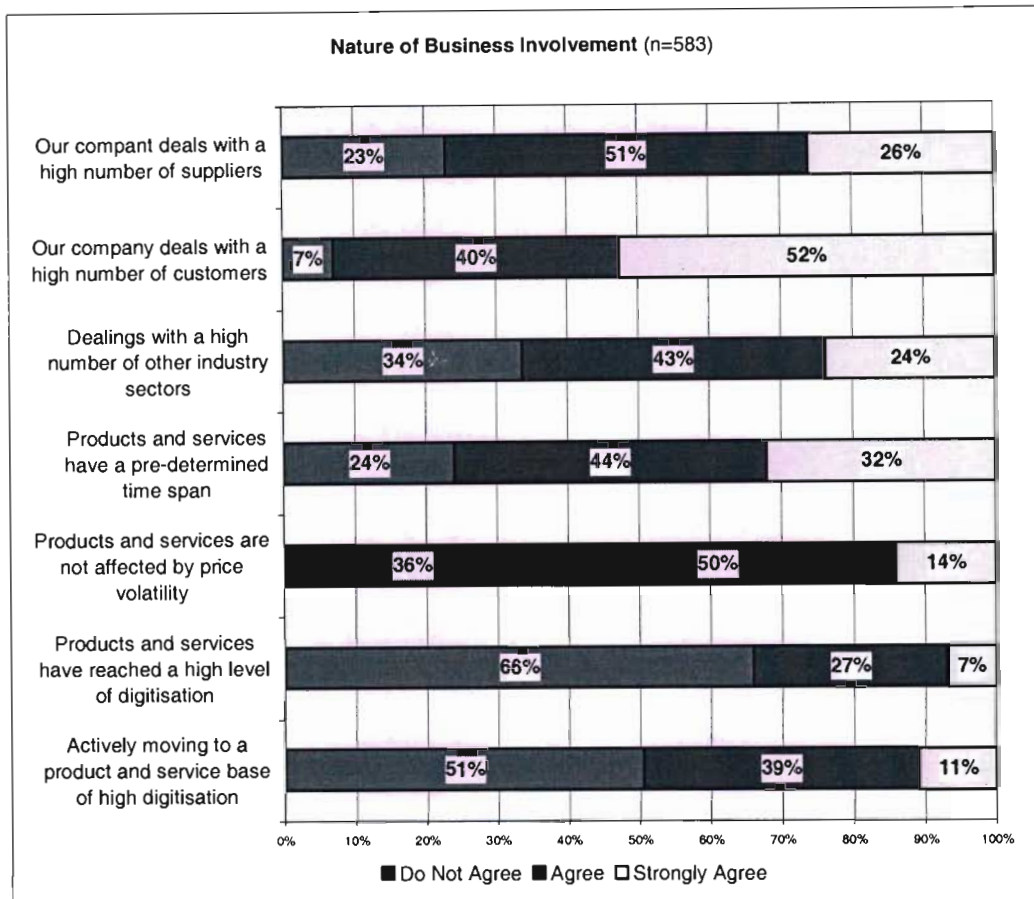


Figure 18: Nature of Respondent Business Involvement (Source: BMI-T, 2001)

Further, there is a tendency for companies in this sample frame to deal with other industry sectors, implying that their involvement is not restricted to a vertical or niche sector, but is predominantly functional or horizontal in nature. Reading into this, vertical hubs or exchanges have a place in industry, but it would be more likely that functional hubs would be adopted sooner since they could service a more immediate need across industry sectors.

More conclusions can be drawn from Figure 18, namely that company transaction integration across the supply chain will become increasingly important if there is to be a concerted effort and move towards business-to-business (B2B) and any form of e-marketplace or exchange to deal with the high number of industry sectors. Consequently, SCM, ERP and CRM will become pivotal tools in this integration process.



Awareness of supply chain automation (SCA) or SCM, however, is poor. Some 48% of the respondents are not aware of SCA, even though they clearly indicated they constantly interact with customers and suppliers. The significance of this is that the market needs to become more aware of how to implement technology solutions for its identified needs. Consequently 82% of respondents have no plan to implement SCA. This perhaps could be a barrier in advancing B2B or eMarketplace adoption in South Africa.



Chapter 4: South African Corporate Information Technology Trends

This chapter looks at the technology trends in corporate South Africa for certain industry sectors based on:

- Enterprise Application Implementation
- Enterprise Implementation per vertical sector
- What IT services are outsourced
- E-Commerce perceptions and company strategies
- Obstacles to e-commerce implementation
- Connectivity, and
- IT budgets

The majority of secondary data has been sourced from a survey⁸ done by BMI-T (July 2002) with a total of 118 interviews from a universe size of 400 corporate companies in South Africa in various industries and vertical segments ranging from business and financial services, manufacturing, public services, wholesale and retail and industrial segments. The interviews were held between February and April 2002.

By definition and to clarify the industry sectors, the **business and financial** vertical sectors comprised of banking, insurance, legal services and engineering management services. The **manufacturing** vertical consists of discrete manufacturing, process manufacturing and the automotive industry. Healthcare, broadcast and communications, transportation, utilities, education and government are grouped under the **public** sector. The wholesale and retail simply comprise of **wholesale and retail** businesses whilst the **industrial and resources** sector constitute mining, agriculture and construction.

The **other services** verticals, which are not easily defined, are considered to comprise of publishing, scientific research, defence research and security services.

⁸ Kolb C., Moller D., South African Corporate IT User Trends, BMI TechKnowledge Group, Report ES 201, 2002.



4.1 ENTERPRISE APPLICATION IMPLEMENTATION

Enterprise Application Software Implementation Phase (%)							
	No Plans	We are considering	Planning Phase	Decision Phase	Build Phase	Initial Role Out	Fully Installed
Customer Relationship Management	35.4%	18.6%	10.6%	1.8%	6.3%	10.6%	16.8%
Call Centre Software	42.6%	8.7%	4.3%	1.7%	4.3%	2.6%	35.7%
Data Warehousing	31.3%	14.8%	7.8%	4.3%	10.4%	5.2%	26.1%
Enterprise Resource Management	27.2%	8.8%	5.3%	1.8%	5.3%	3.5%	48.2%
Collaborative Applications	11.6%	3.6%	5.4%	1.8%	2.7%	4.5%	70.5%
Content Management Applications	51.3%	13.3%	7.1%	0.0%	2.7%	4.5%	70.5%
Supply Chain Automation (SCA)	54.8%	6.1%	7.0%	3.5%	3.5%	5.2%	20.0%
Internet Based Sales System	50.4%	14.8%	6.1%	2.6%	6.1%	8.7%	11.3%
Internet Based Procurement	57.5%	17.7%	7.1%	1.8%	2.7%	2.7%	10.6%
Information Access Tools	36.6%	13.4%	5.4%	1.8%	5.4%	3.6%	33.9%
E-Logistics Applications	71.7%	9.7%	3.5%	0.0%	0.9%	1.8%	12.4%
B2B E-Marketplace Exchange Applications	63.4%	16.1%	4.5%	0.9%	2.7%	2.7%	9.8%
Portal Technology	60.2%	13.9%	7.4%	2.8%	1.9%	2.8%	11.1%
Security Technologies	8.0%	1.8%	2.7%	0.9%	0.9%	3.5%	82.3%

Table 2: Enterprise Application Software Implementation Phase (Source: BMI-T, 2002)

Enterprise application software implementation phases in the corporate sector are summarised in Table 2 and graphically in Figure 19, indicate penetration levels in the South African marketplace.

The software components with the highest adoption or penetration are the security technologies with 82% of the market indicating that some form of security measures is in place. In a security conscious society like South Africa, this perhaps is no surprise. However, basic business needs such as anti-virus programs and firewalls have the greatest penetration and adoption levels than any other security measure. Enterprise resource management (ERM) systems represent 48% adoption with a further 25% indicating some level of consideration. This leaves approximately 27% of the corporate market with no plans for adoption. Reading into these figures, it would



seem that corporate South Africa is interested in becoming more operationally efficient with companies in the build phase and initial role out phases indicating implementation trends.

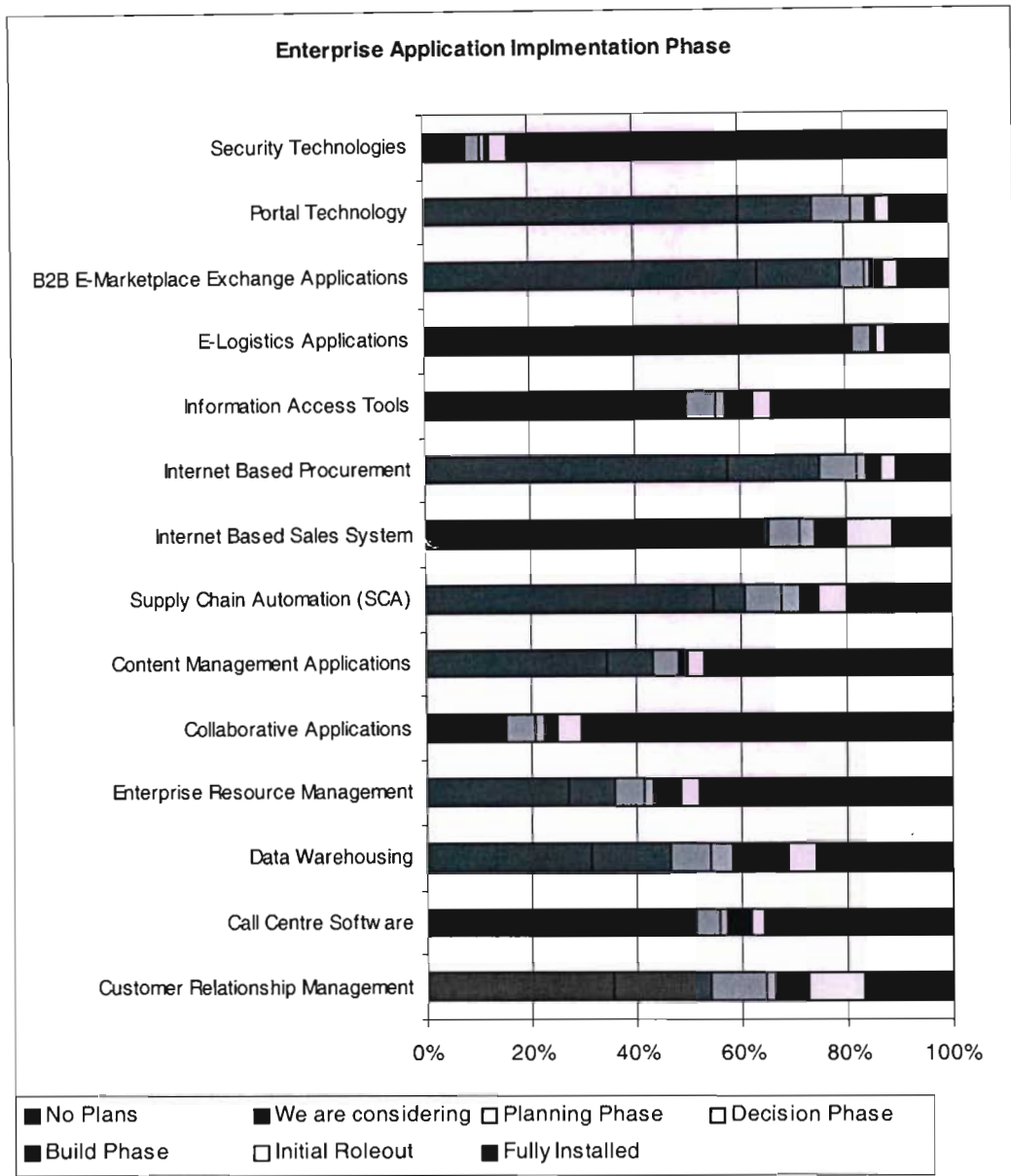


Figure 19: Enterprise Application software Implementation Phase (%) (Source: BMI-T, 2002)

Looking again into the implementation trends, the following are currently in the growth phases of implementation, namely, information access tools, data warehousing, call centre software, customer relationship management, Internet based sales and procurement. What is interesting in the implementation of these



specific tools is that they are somewhat interrelated. CRM has a low fully installed base, but indicates to have the highest implementation growth rate. Information access tools, data warehousing and call centre software all aid the CRM process and therefore they would be pivotal in the implementation of a fully CRM focused company.

Internet sales and procurement have very low fully installed company implementation, but have potentially as high growth rates as CRM. This is despite the disillusionment and pessimism regarding Internet based sales, procurement and CRM applications. The main drivers for the implementation of these systems would be customer retention and cost reduction. The potential adoption of CRM indicates the focus that organisations have on customer service.

Solutions that show low adoption trends are portal technologies, B2B E-marketplace exchange applications, information access tools and to some extent, content management. Some 63% of companies indicated that they have no plans of adopting B2B E-marketplace applications and are therefore not prepared to make the investment required in this direction.

Of concern and looking towards the future, is that supply chain management (SCM) is not high on the implementation drive. Further research revealed that (Source BMI-T, 2002) when it came to satisfaction levels, there was a large gap between SCM solutions providing satisfactory results. Consequently, this has led to an unexpected decline in the take-up of SCM.

4.2 VERTICAL IMPLEMENTATION OF ENTERPRISE APPLICATIONS

The following data looks into the penetration levels of enterprise applications for various vertical industries as indicated below, namely:

- Business and Financial Services
- Manufacturing
- Public Sector
- Wholesale and Retail
- Other Services
- Industrial and Resources



Customer relationship management is used to facilitate the acquiring and retain of customers. Broadly, CRM contains components that combine collaborative and analytical tools to assist with sales, service and marketing. In terms of CRM, the industrial and resources sector shows the greatest adoption potential by having high propensity figures for adoption, whilst the wholesale and retail sector indicates the highest level of penetration as a sector. Even though other services have the highest stand-alone score here, these verticals have been grouped together and therefore do not constitute a definable vertical.

Implementation Phase - CRM						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	45.8%	52.6%	66.7%	58.3%	42.9%	50.0%
High Propensity	20.8%	13.2%	14.3%	0.0%	7.1%	37.5%
Current Penetration	33.4%	34.2%	19.0%	41.7%	50.0%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 3: CRM Implementation in Vertical Industries (Source: BMI-T, 2002)

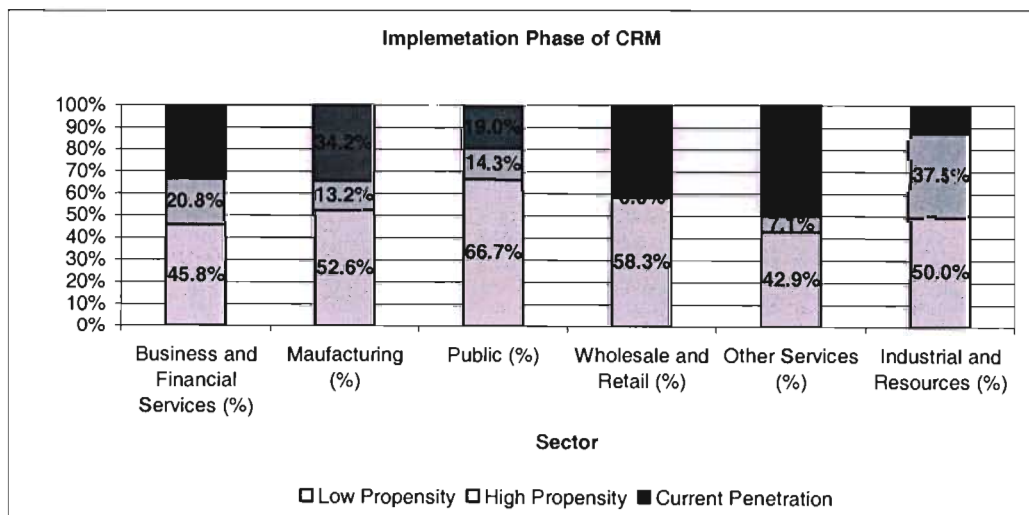


Figure 20: CRM Implementation in Vertical Industries (Source: BMI-T, 2002)



Importantly is the adoption of the business and financial sector in CRM with current figures of around 34%, but more importantly, the sector should see a growth with a further 21% of the market taking up CRM. One could conclude from this that this sector is becoming more customer-focused. The industrial and resources sectors show some tendency for future adoption, indicating that they wish to “get closer” to their customers and improve their service levels consequently.

Implementation Phase - CALL CENTRE						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	41.7%	65.8%	38.1%	50.0%	40.0%	75.0%
High Propensity	8.3%	5.3%	9.5%	0.0%	6.7%	12.5%
Current Penetration	50.0%	28.9%	52.4%	50.0%	53.3%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 4: Call Centre Implementation in Vertical Industries (Source: BMI-T, 2002)

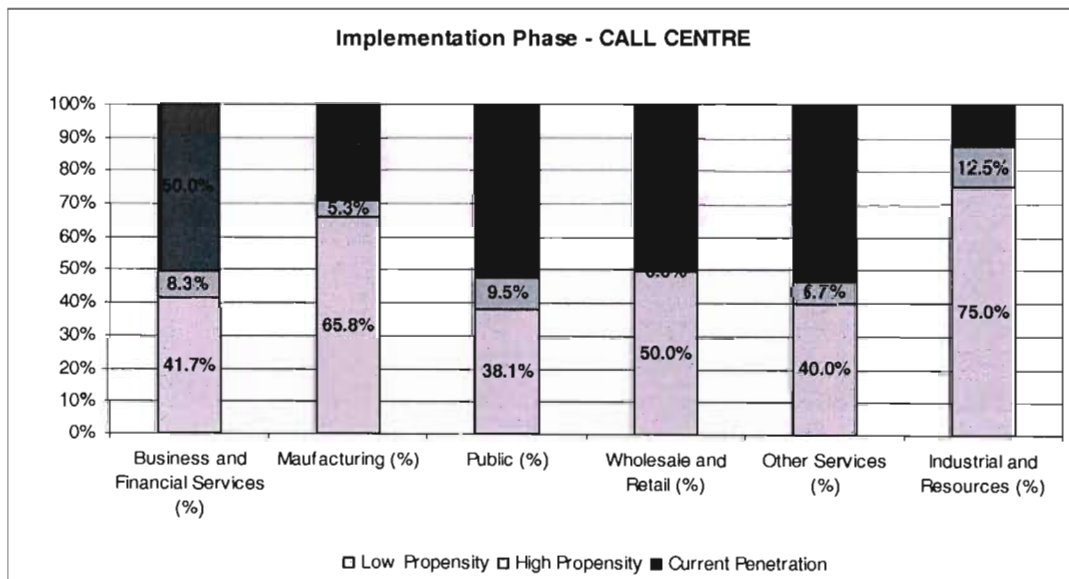


Figure 21: Call Centre Implementation in Vertical Industries (Source: BMI-T, 2002)



Generally the adoption of call-centres is high, with the business and financial, public, wholesale and retails sectors implementing solutions. This should be the case in customer facing organisations or in organisations that are customer driven non-customer facing sectors such as the industrial and manufacturing sectors have a low adoption trend and consequently do not have implementation plans.

Communications channels have an important role to play in the CRM strategy of companies. In a separate survey done by Du Plessis and Kolb (The CRM User Survey, 2001), several communications channels for CRM where proposed and respondents responded according to the channel's perceived importance. Call centres, email and Internet-enabled channels were identified as the most important channels, which also require high interactivity. Less interactive media such as direct mail is considered less important than more interactive media. The significance of this shift is the importance of interactivity with customers and the promotion of two-way interaction between client and company.

What is the fundamental reason for the increased interest in CRM? Du Plessis and Kolb have found that companies are realising more and more that it is much less costly to retain and expand customer relations than to acquire new ones. CRM is therefore considered a key business enabler.

Communication Channel Importance Ratings					
	Not at all Important	Not Important	Indifferent	Important	Very Important
Direct Mail	8%	15%	19%	40%	18%
Email	3%	3%	6%	50%	37%
Internet/Web	3%	2%	15%	47%	34%
Advertising	8%	11%	19%	24%	37%
Branch / Store	16%	8%	8%	42%	26%
Direct Sales	8%	10%	15%	31%	36%
Telemarketing	16%	13%	21%	32%	18%
Inbound Call Centre	5%	6%	11%	34%	44%
Conferences and Events	15%	24%	18%	18%	26%
Mobile Devices	8%	15%	18%	27%	32%
PABX	3%	19%	20%	37%	20%

Table 5: Communication Channel Importance (Source: BMI-T, 2001)

Customer support automation CRM software was identified as the primary investment area with customer information software and marketing automation as being high investment areas. Sales automation is receiving greater investment, but



still lags the focus that other areas enjoy. One area that is growing in importance is that of analytical applications. Together with data mining and business intelligence, analytical packages will become more important. These analytical applications will allow companies access to data warehousing, online analytical processing (OLAP) and data mining to form integrated customer views.

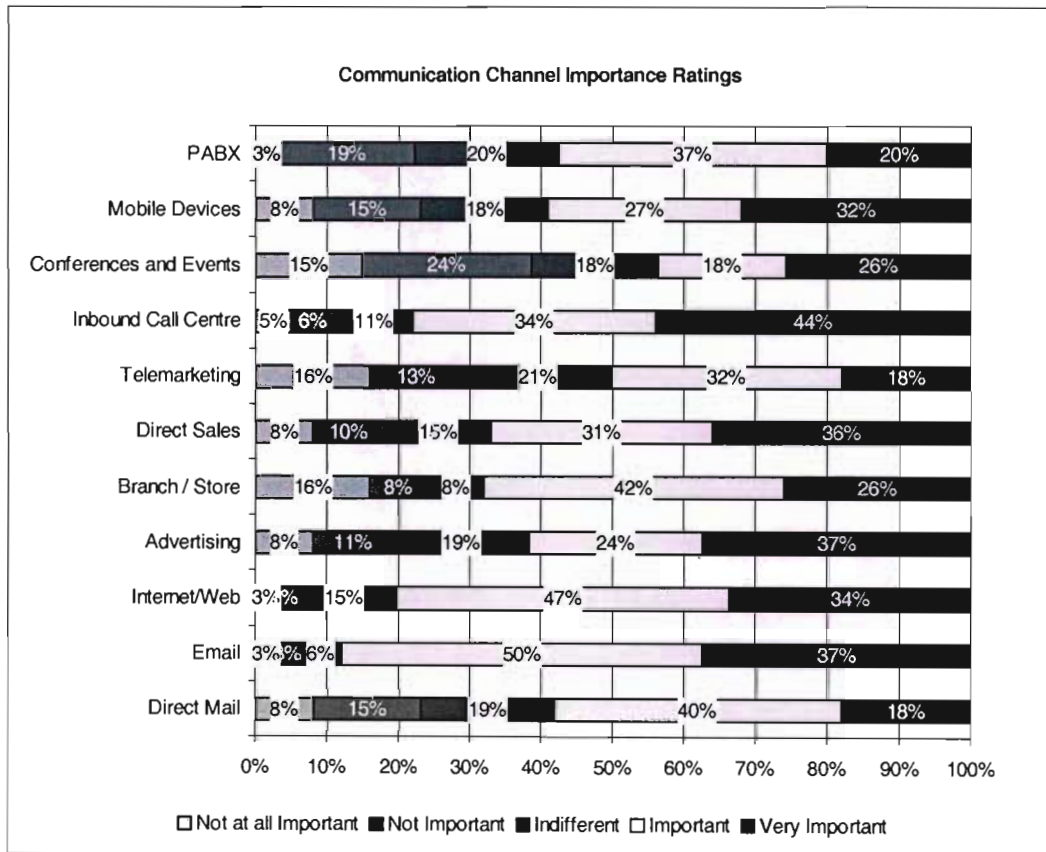


Figure 22: Communication Channel Importance in CRM Strategy (Source: BMI-T, 2001)

Implementation Phase - DATA WAREHOUSING						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	37.5%	60.5%	42.8%	8.3%	40.0%	87.5%
High Propensity	16.7%	7.9%	28.6%	0.0%	13.3%	0.0%
Current Penetration	45.8%	31.6%	28.6%	91.7%	46.7%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 6: Data Warehousing Implementation in Vertical Industries (Source: BMI-T, 2002)



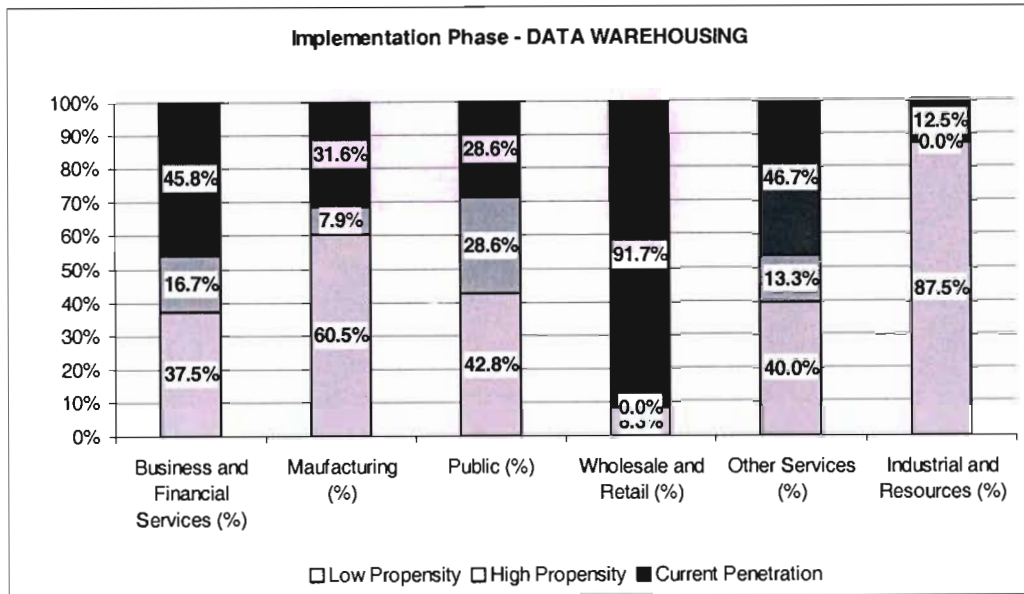


Figure 23: Data Warehousing Implementation in Vertical Industries (Source: BMI-T, 2002)

Together with CRM, data warehousing has the highest adoption trends. Data warehousing serves as a storage system as well as a source of information for databases that can be used by various applications including server applications to ERP systems.

As one would expect, the wholesale and retail sectors have a high degree of data warehousing need. This stems from the nature of the business that they are in and the need to warehouse substantial customer information. This information is not only used for transactional purposes, but also for data mining and improving customer relationships through better market segmentation, product positioning and the quest to improve customer fulfilment.

On the opposite side of the adoption spectrum are the industrial and manufacturing sectors, which are not highly reliant on customer information. Also, transactional volumes are not high. Therefore the need for data warehousing is lower in these verticals. Interestingly, the public sector has indicated that they have a high propensity to adopt data warehousing indicating greater customer focus for this sector in the near future.



Implementation Phase - ENTERPRISE RESOURCE PLANNING						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	45.8%	18.4%	57.1%	33.3%	33.3%	62.5%
High Propensity	16.7%	5.3%	9.5%	0.0%	6.7%	0.0%
Current Penetration	37.5%	76.3%	33.4%	66.7%	60.0%	37.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 7: Enterprise Resource Planning Implementation (Source: BMI-T, 2002)

Looking at enterprise resource planning (ERP) implementation, the business and financial sectors show a low level of current adoption. This is somewhat surprising in that the business sector usually takes the lead in e-business implementation. However, looking further into the results reveals that the same sector has a high propensity to adopt ERP, which would indicate a reversal of current trends. ERP systems typically include order entry, account tracking facilities and general ledgering systems.

The public sector has low levels of ERP adoption, but statistics indicate that there is some movement towards digitising their resource systems. The wholesale and retail industry is the current adoption leader in ERP systems with a 66% penetration. This is not surprising given the fact that by the nature of their business, managing resources and logistics is a corner stone to their business survival.



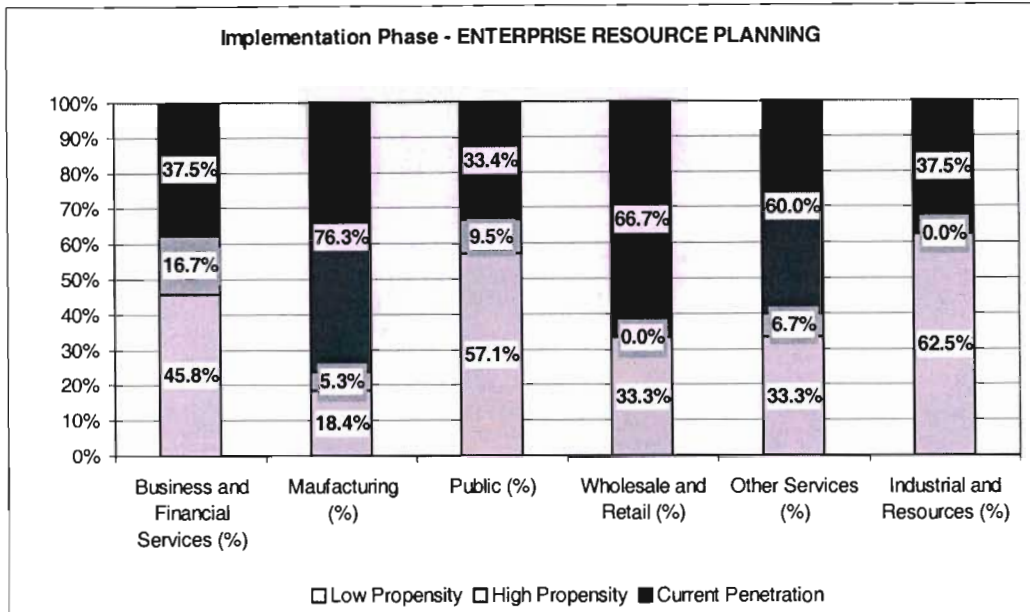


Figure 24: Enterprise Resource Planning Implementation (Source: BMI-T, 2002)

Collaborative applications are defined as applications that assist the organisation to function more efficiently and effectively and have an internal business focus. BMI-T separates CRM and collaborative applications and typically segments these to include Novell, MS Outlook and MS Exchange as examples of what are regarded as collaborative applications.

	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	8.3%	23.7%	33.3%	8.3%	20.0%	12.5%
High Propensity	0.0%	7.9%	9.6%	8.3%	6.7%	12.5%
Current Penetration	91.7%	68.4%	57.1%	83.4%	73.3%	75.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 8: Implementation of Collaborative Applications (Source: BMI-T, 2002)



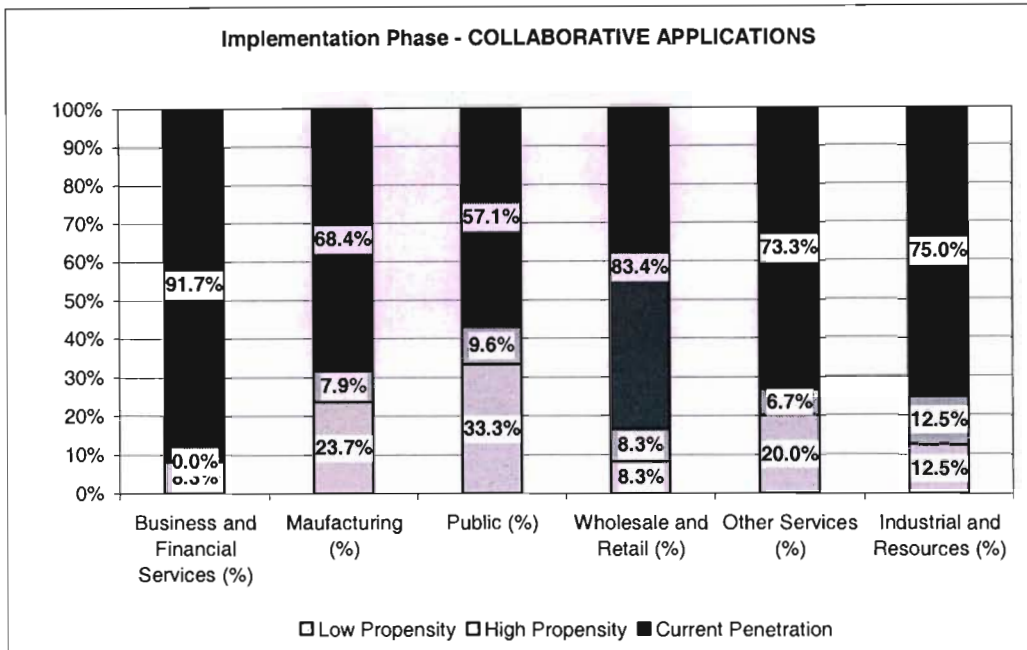


Figure 25: Implementation of Collaborative Applications (Source: BMI-T, 2002)

All sectors show relatively high adoption levels of collaborative applications with the business (91%) and financial sectors having the highest penetration levels followed by the wholesale and retail sector (83%) indicating the need for internal communication channels and speed of communication. The old saying is applicable here - "Time is Money".

The public sector is somewhat behind in collaborative applications adoption (57%), but there are some indications that this is on the increase.

The industrial and resources sector show potentially the greatest increase in the near future with an increase of 12%. This sector also has the second highest adoption levels of 75%.



Implementation Phase - CONTENT MANAGEMENT						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	70.8%	68.4%	71.4%	50.0%	60.0%	62.5%
High Propensity	0.0%	5.3%	23.8%	8.3%	0.0%	0.0%
Current Penetration	29.2%	26.3%	4.8%	41.7%	37.5%	37.5%
Total	100.0%	100.0%	100.0%	100.0%	97.5%	100.0%
n=	24	38	21	12	15	8

Table 9: Content Management Implementation (Source: BMI-T, 2002)

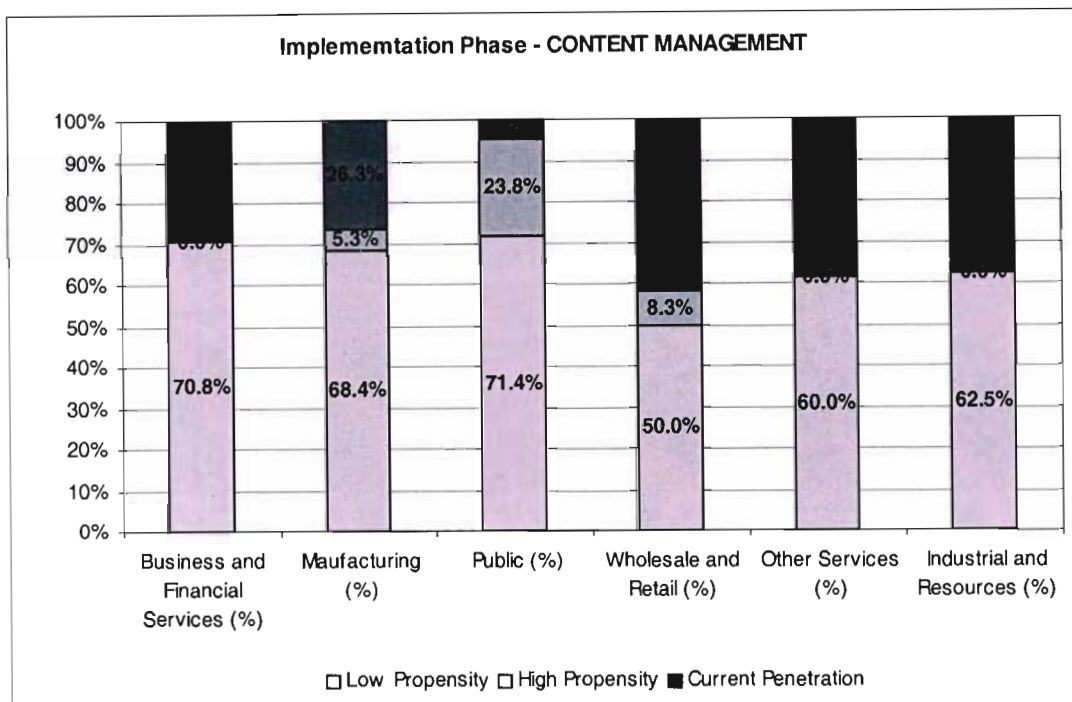


Figure 26: Content Management Implementation (Source: BMI-T, 2002)

Content management allows companies to manage online content ranging from catalogues to product specifications and for the retrieval of stored knowledge and information. There is surprisingly very little adoption of content management across all the sectors. However, the wholesale and retail industry has the highest penetration of 41% and an expected growth of around 8%. The business and financial sectors as well as the industrial sectors have overwhelmingly indicated that



they are not interested in content management. This is consistent with other industries. The public sector is seen to have the highest adoption rate of 23%, indicating a potential take-up of content management as a service to the public in its quest to become more service oriented.

As a business application, supply chain management (SCM) manages logistics from supplier to customer to promote competitive advantage in controlling the planning and execution of products and services. It is expected that the manufacturing sector would lead the way in this regard. South Africa is no exception with the leading in current implementation and propensity. The wholesale and retail industry follows suite, but only 50% of the industry has indicated that they are interested in the implementation of SCM. The lowest level of SCM adoption now and in the future will be in the business and financial services sector as well as the industrial resources sector. This is expected in that the financial services sector traditionally are positioned at the end of the service or value chain and the industrial sector at the beginning. Also, the business and financial sectors are service sectors and do not deal in physical products. Consequently, the “middle” men are the manufacturing and wholesale industries and therefore rely on getting the products between their suppliers to their customers as efficiently as possible.

Implementation Phase - SUPPLY CHAIN AUTOMATION						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	70.8%	39.5%	85.7%	50.0%	73.3%	75.0%
High Propensity	4.2%	18.4%	9.5%	8.3%	0.0%	12.5%
Current Penetration	25.0%	42.1%	4.8%	41.7%	26.7%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 10: SCA Implementation (Source: BMI-T, 2002)



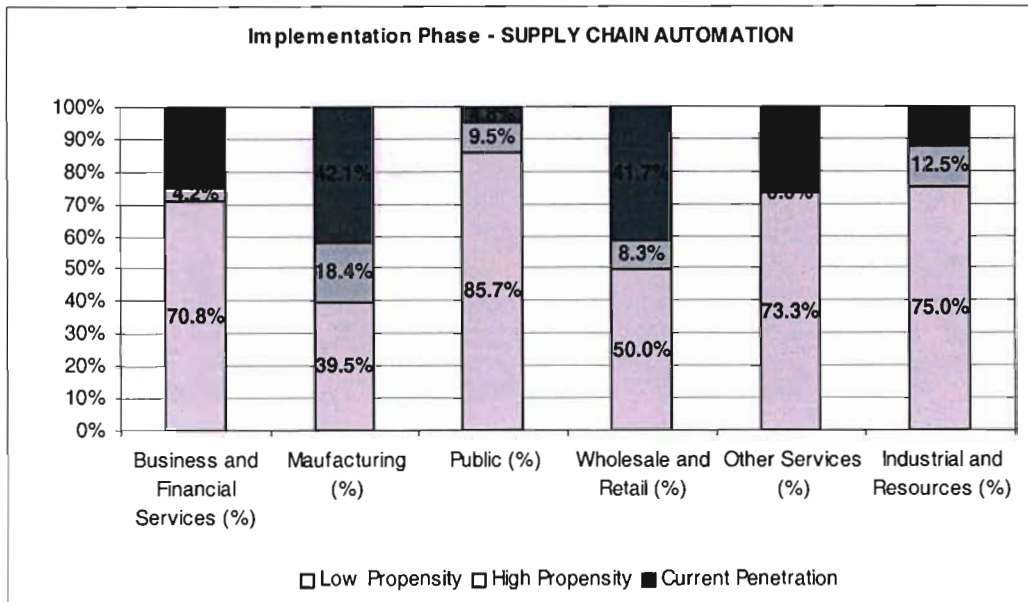


Figure 27: SCA Implementation (Source: BMI-T, 2002)

Examining Internet based sales systems reveals that the industrial and resources sector has not implemented any and does not intent to implement these systems. Other services and manufacturing have the highest percentage in the high propensity category. Unfortunately, the definition of other services is not clear and this cannot be examined in further detail. It is expected that the other services sector is very consumer oriented hence the need for technologies that are more end-customer focused.

Implementation Phase - INTERNET BASED SALES SYSTEMS						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	70.8%	60.5%	81.0%	58.3%	40.0%	100.0%
High Propensity	0.0%	13.2%	9.5%	8.4%	13.3%	0.0%
Current Penetration	29.2%	26.3%	9.5%	33.3%	46.7%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 11: Internet Based Sales Systems (Source: BMI-T, 2002)



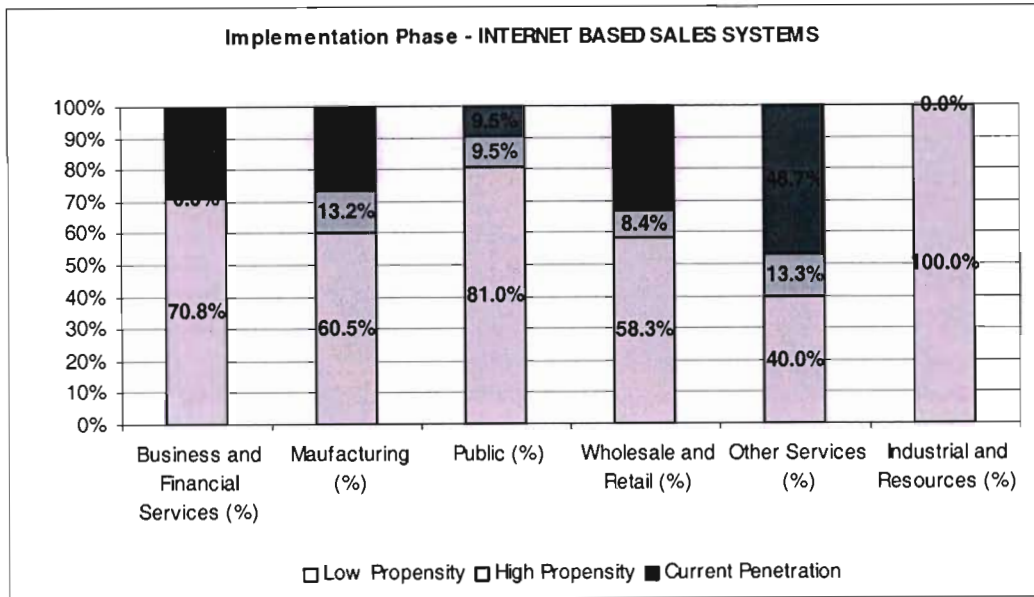


Figure 28: Internet Based Sales Systems (Source: BMI-T, 2002)

Implementation Phase - INTERNET BASED PROCUREMENT						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	66.7%	78.9%	100.0%	83.3%	53.3%	62.5%
High Propensity	4.2%	10.6%	0.0%	8.3%	20.0%	12.5%
Current Penetration	29.1%	10.5%	0.0%	8.3%	26.7%	25.0%
Total	100.0%	100.0%	100.0%	99.9%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 12: Internet Based Procurement Systems (Source: BMI-T, 2002)

Internet procurement does not seem to feature very high on the demand list. The public sector leads with a 100% non-adoption of any form of Internet procurement, which is cause for some concern. Governments across the world are adopting E-Commerce in pursuit of transparency and improved efficiency in tendering processes. Notably the USA is leading in the adoption of Internet based procurement to the point that all government tenders are now Internet based.



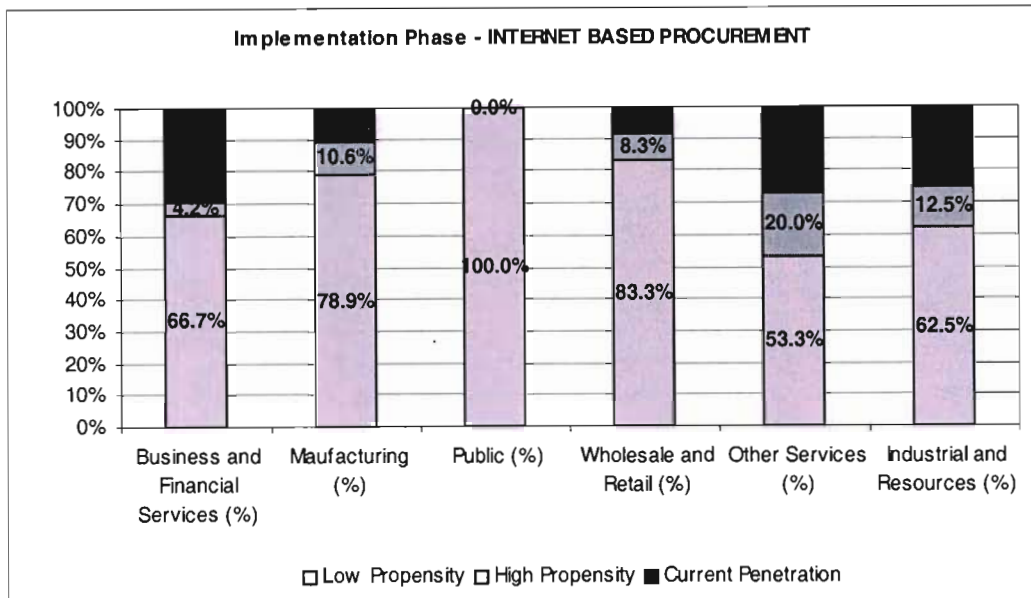


Figure 29: Internet Based Procurement Systems (Source: BMI-T, 2002)

The “other services” sector has the highest Internet based procurement penetration when combined with the high propensity statistics. It is unclear as to what may motivate this trend other than the drive to integrate the value system into the Internet. Current penetration levels are the highest in the business and financial sector, indicating that the sector is looking at continuous improvement and possibly establishing procurement channels with a view of being the financiers.

Wholesale and retail lead the adoption of tools designed for information access (Figure 30). These tools include business intelligence (BI) tools such as data base mining, enterprise information systems, statistical analysis packages and OLAP (online applications). The reason could be that this sector serves a greater number of consumers and therefore requires business information systems in order to make better and faster business decisions based on information that lends to determining customer behaviour.

Wholesale and retail may have the highest level of penetration, but shows a slowing down in potential for the future. Other services show the highest propensity of future adoption of information access tools.



Implementation Phase - INFORMATION ACCESS TOOLS						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	62.5%	55.3%	57.1%	25.0%	46.7%	50.0%
High Propensity	0.0%	5.3%	9.6%	8.3%	20.0%	0.0%
Current Penetration	37.5%	39.5%	33.3%	66.7%	33.3%	50.0%
Total	100.0%	100.1%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 13: Information Access Tools (Source: BMI-T, 2002)

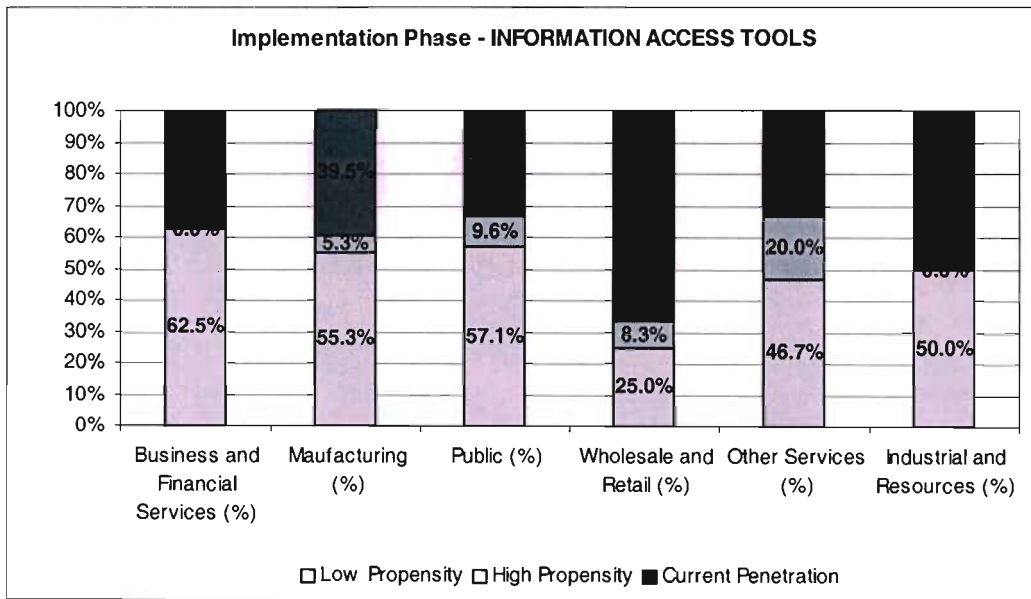


Figure 30: Information Access Tools (Source: BMI-T, 2002)

Implementation Phase – E-LOGISTICS						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	75.0%	89.5%	95.2%	66.7%	73.3%	75.0%
High Propensity	8.3%	2.6%	0.0%	0.0%	6.7%	0.0%
Current Penetration	16.7%	7.9%	4.8%	33.3%	20.0%	25.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 14: E-Logistics Implementation (Source: BMI-T, 2002)



In E-Logistics, the wholesale and retail sectors have the highest current penetration, but show no potential growth in the future. The business and financial sector, even though low in penetration, has the highest potential for growth in the future. This could be attributed to the diverse interests that the financial sector has and therefore is the main driver for E-Logistics. This is some penetration in other sectors, but there is little or not intention of adopting further e-logistics in these sectors. This leads onto the examination of the implementation of B2B e-marketplaces or exchanges that have similar trend patterns.

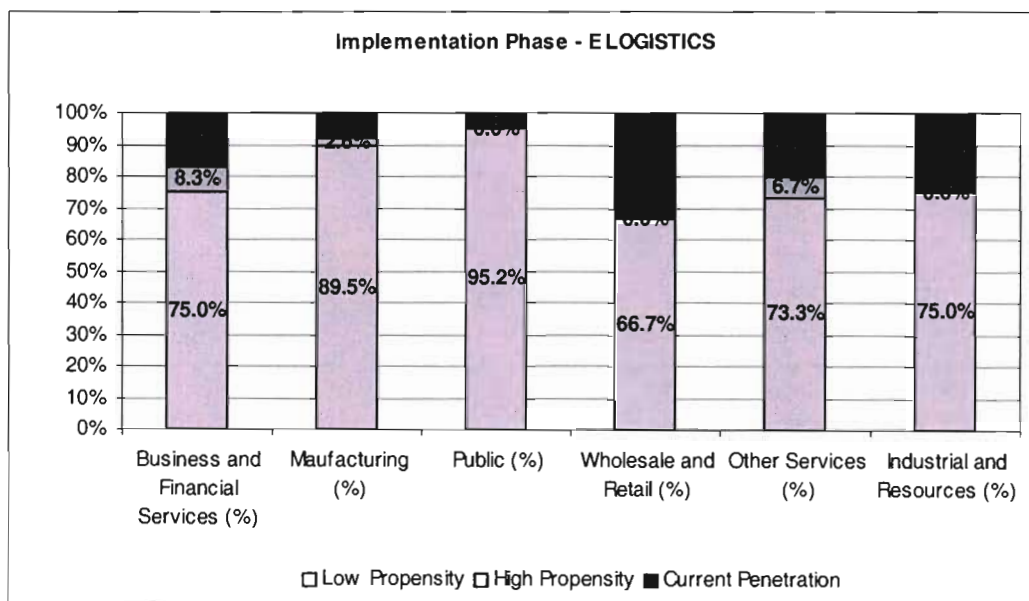


Figure 31: E-Logistics Implementation (Source: BMI-T, 2002)

	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	75.0%	86.8%	95.2%	66.7%	60.0%	87.5%
High Propensity	4.2%	5.3%	0.0%	8.3%	13.3%	0.0%
Current Penetration	20.8%	7.9%	4.8%	25.0%	26.7%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N=	24	38	21	12	15	8

Table 15: B2B E-Marketplace Exchange Implementation (Source: BMI-T, 2002)



Other services have the highest current penetration and highest propensity of all the vertical sectors in the B2B e-marketplace. From this one would expect that publishing, scientific research, defence research and security services, which are niche markets, will have the highest growth rates in the B2B e-market place. With the growth of the Internet in the late 1980's and early 1990's, research institutions such as government departments, the military and universities used the Internet as a means for information exchange. The same can now be extrapolated for the early 2000's where the same sector will lead in the adoption of B2B and do the initial proof-of-concept in the industry.

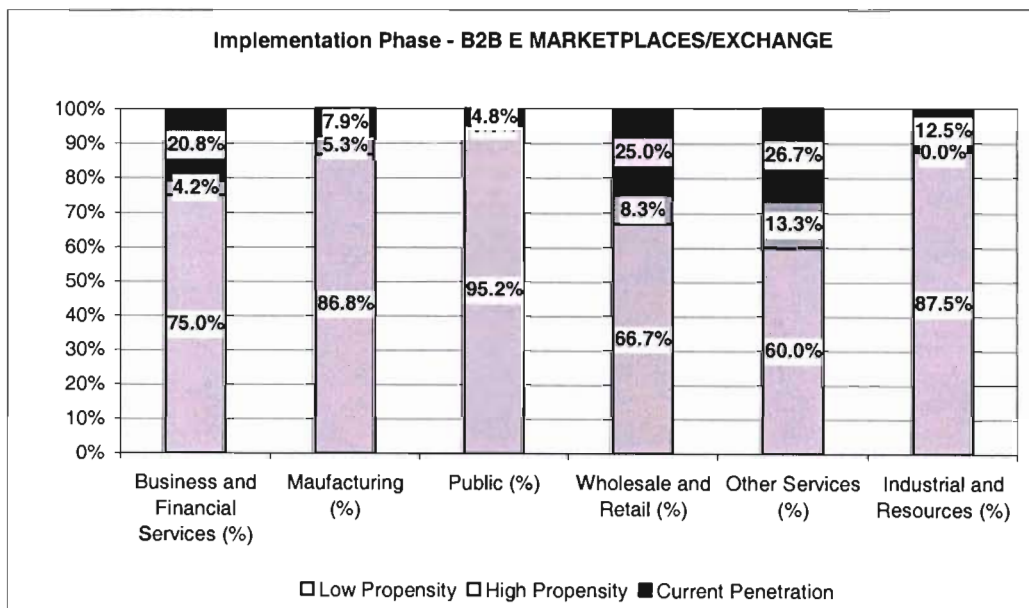


Figure 32: B2B E-Marketplace Exchange Implementation (Source: BMI-T, 2002)

The need for exchanges in the business and financial sector as well as the wholesale and retail sectors is comparatively high. This stems from the need to serve the end user or customer. Therefore these highly customer focused sectors will in the future benefit from improved customer loyalty, retention, relationship management and cost reductions.

There is potentially a doubling in the adoption of B2B exchanges in the manufacturing industry from 7.9% to 13.2% in the near future. The significance of this is that this industry is starting to adopt B2B as another channel for their goods and potential could be come the largest winners from the adoption of exchanges.



The public and industrial sectors have very little interest in the adoption of B2B exchanges. The reasons for this could range from the public sector seeing itself as a service sector, not as a trading sector for goods and services. However, having said this, the government is one of the largest employers in South Africa either directly or indirectly. If the recent trends of the American government are anything to go by, then future trade with the public sector will increasingly involve the use of the Internet for its business-to-business capabilities.

Portal technology implementation seems to follow similar trends as B2B exchange implementation. Wholesale and retail have the highest penetration, but have the weaker potential in the future when compared to the other services sector.

Implementation Phase - PORTAL TECHNOLOGY						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	70.8%	84.2%	85.7%	58.3%	60.0%	87.5%
High Propensity	12.5%	7.9%	0.0%	8.3%	20.0%	12.5%
Current Penetration	16.7%	7.9%	14.3%	33.3%	20.0%	0.0%
Total	100.0%	100.0%	100.0%	99.9%	100.0%	100.0%
N=	24	38	21	12	15	8

Table 16: Portal Technology Implementation (Source: BMI-T, 2002)

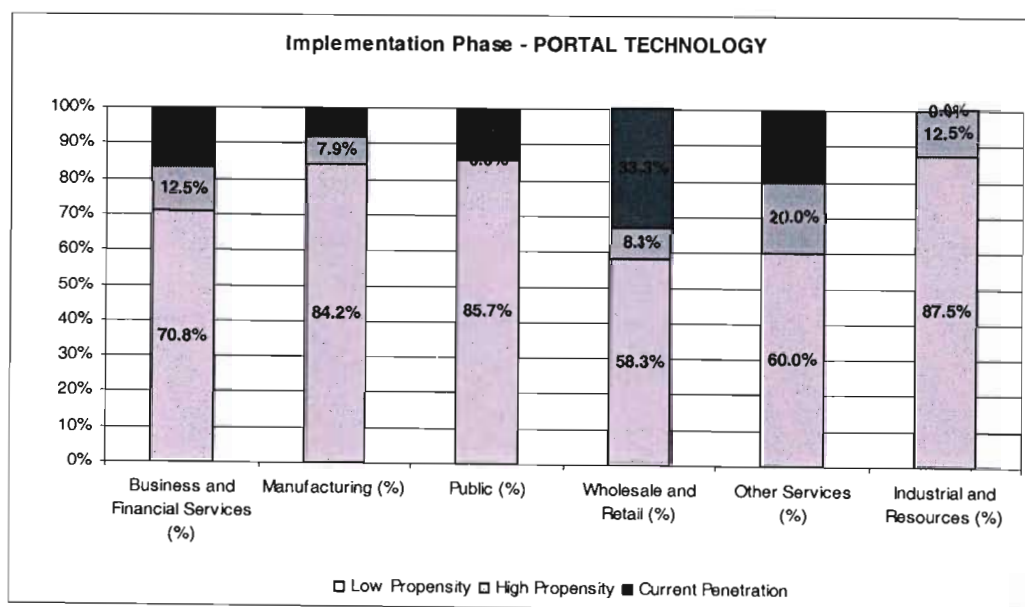


Figure 33: Portal Technology Implementation (Source: BMI-T, 2002)



As indicated previously, security has the largest adoption figures for enterprise applications and on examination of the various industry sectors, current adoption is consistent in all the sectors. Note that security has been defined by BMI-T as being broad based ranging from simple anti-virus implementation, through to firewalls and digital certification.

Examining the industrial sector with relatively few “customers” versus the wholesale a retail sector with potentially many more “customers”, it would seem that the adoption of security increases with potential transaction volume. Apart from the other services sector, the business and financial sector seems to be more security aware or conscious than other sectors in general. Manufacturing and wholesale sectors also have high adoption levels of security products and measures.

Implementation Phase - SECURITY TECHNOLOGIES						
	Business and Financial Services (%)	Manufacturing (%)	Public (%)	Wholesale and Retail (%)	Other Services (%)	Industrial and Resources (%)
Low Propensity	8.3%	15.8%	14.3%	8.3%	6.7%	37.5%
High Propensity	4.2%	5.3%	0.0%	8.3%	0.0%	0.0%
Current Penetration	87.5%	78.9%	85.7%	83.4%	93.3%	62.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n=	24	38	21	12	15	8

Table 17: Security Technology Implementation (Source: BMI-T, 2002)

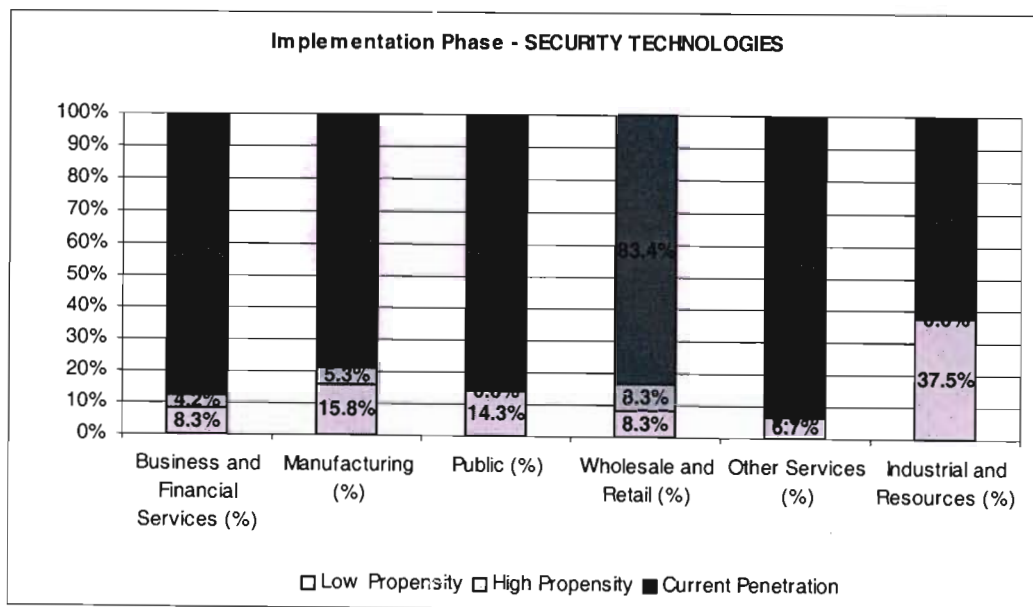


Figure 34: Security Technology Implementation (Source: BMI-T, 2002)



4.3 IT OUTSOURCING SERVICES

As South African businesses continue to leverage technology, IT consulting and implementation services are expected to continue increasing. Enterprise applications, collaborative tools, CRM and other software tools will continue to be implemented as well. However, BMI-T concludes that in the future (post 2002), that the key to implementation for outsourcing service organisations will be in integrating IT infrastructure with back-end applications and databases in seeking to improve efficiencies and reduce operational maintenance costs of these applications. Cost cutting measures and service levels are driving the demand for information systems outsourcing.

Areas Outsourced, Currently and Over the Next 18 Months		
	Current (%)	Next 18 Months (%)
Network Support	60.2%	46.0%
Software Development	55.7%	47.6%
Desktop Support and Maintenance	52.3%	34.9%
Training	50.0%	47.6%
Web Hosting	46.6%	33.3%
Disaster Recovery Management	35.2%	39.7%
Help Desk	29.5%	20.6%
Internet Data Centre	22.7%	20.6%
Application Hosting - Incl. ASP	21.6%	17.5%
Call Centre	21.6%	22.2%
Storage and Document Management	15.9%	20.6%
Mainframe Processing	13.6%	9.5%
Complete IT Infrastructure	11.4%	15.9%
Other Business Services	10.2%	4.8%
Mainframe Data Centre	10.2%	12.7%
E-Procurement	9.1%	7.9%
E-Marketplace Services	8.0%	7.9%
Logistics	8.0%	9.5%
High-end Server Processing	8.0%	9.5%
Business Processing Outsourcing	6.8%	4.8%
IT Security	4.5%	4.8%

Table 18: Outsourced Services (Source: BMI-T, 2002)



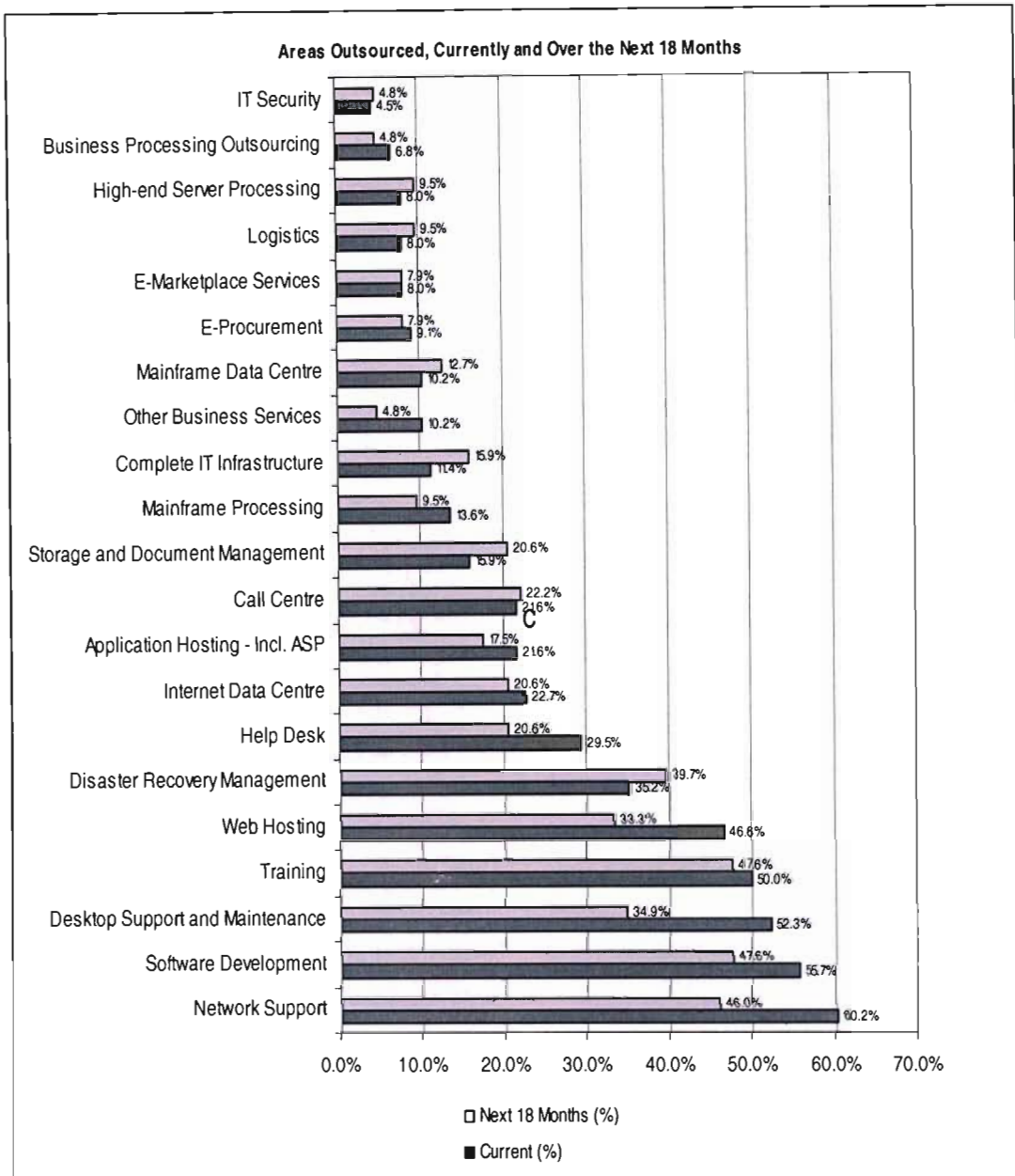


Figure 35: Outsourced Services (Source: BMI-T, 2002)

Most companies are not prepared to outsource IT services completely despite the potential cost savings. Basic network support is the highest component outsourced, but seems as though it is into decline. The probable reason is that the demand for IT services has decreased and the cost associated with retaining experienced IT personnel has dramatically dropped over the last 18 months. Also, plug-and-play technology is facilitating maintenance issues. Consequently, companies are in the process of re-hiring IT staff back to maintain their IT systems.



Of the above outsourcing areas, IT security, server processing, logistics, storage management and disaster recovery, are the only outsourcing areas that are considered by the respondents to increase. The areas of outsourcing are mostly based in service assurance and security and information retrieval representing a back-to-basics adoption of outsourced services. As for any business-to-business and e-commerce outsourcing trends, there seems little evidence that these services are high on the outsource demand list. Adoption of these technologies is still in their infancy and therefore the general outsourcing trend would be low.

From the above figure and combining this with the position of the outsourcing service in the product or adoption cycle, there seems to be a strong correlation between the product/service position in the adoption cycle and the outsourcing service. Therefore, network infrastructure can be said to be already in the saturation stage of adoption in South Africa and reflects the high levels of outsourcing when compared to the adoption of e-marketplaces, which is still in the early stages of adoption.

E-procurement, ASP services, e-marketplace and logistic outsourcing are relatively in the early adoption stages. It would seem that if companies are adopting the technologies, that outsourcing implementation is at a low level of adoption.

4.4 SOUTH AFRICAN E-COMMERCE PERCEPTIONS AND STRATEGY

The following information presented is taken from a BMI-T report on South African Corporate IT User Trends⁹.

The question was presented to the respondents on what their understanding and perception of the term e-business. Several multiple responses were given and the response is outlined below.

The majority of companies consider e-business as a means to communicate with customers and suppliers alike representing the view that the Internet is an alternative sales and marketing channel for promotional and customer relationship management needs. The Internet is viewed further as a tool for implementing a greater bond between themselves and customers and suppliers. However, it would seem that supply chain integration is not seen as e-business. This seems a contradiction and

⁹ Kolb C., Moller D., South African Corporate IT User Trends, BMI TechKnowledge Group, Report ES/201, 2002



the possible explanation would be that companies are not fully aware of the full scope of advantages of supply chain automation and that e-business integrates both upstream and downstream activities instead of having these as separate enterprise applications.

Business Definition of E-Business	
Definition Options	Percentage (%)
Using the Internet to communicate with customers	79.3%
Using the Internet to communicate with suppliers	72.1%
Settling transactions via a web site or integrated system and solution	56.8%
The development of an Intranet or Extranet	49.5%
Using the Internet to communicate with staff	47.7%
Automating internal business processes	45.0%
Setting up a company web site	40.5%
Sales and service transactions over the Internet	1.8%
Electronic company to company communications (B2B)	1.8%
Leveraging communication technology to supplement business processes	0.9%
Moving from manual based system to faster electronic systems	0.9%
Communication with the supply chain	0.9%
n=111, Multiple responses	

Table 19: Definition of E-Business (Source: BMI-T, 2002)

Companies also do not perceive e-business as

- Facilitating transactions,
- Improving inter-company communications,
- Using technology to improve business processes and moving towards electronic system automation.

The significance of this in the future is that true e-business adoption and integration characteristics will not be considered in the near future and the integration advantages of the Internet will not be effectively leveraged. Consequently, even if companies are aware of technologies, there still exists a gap between technology awareness and fulfilment and implementation. This seems to go against the net liberated organisation philosophy that Garter has proposed.



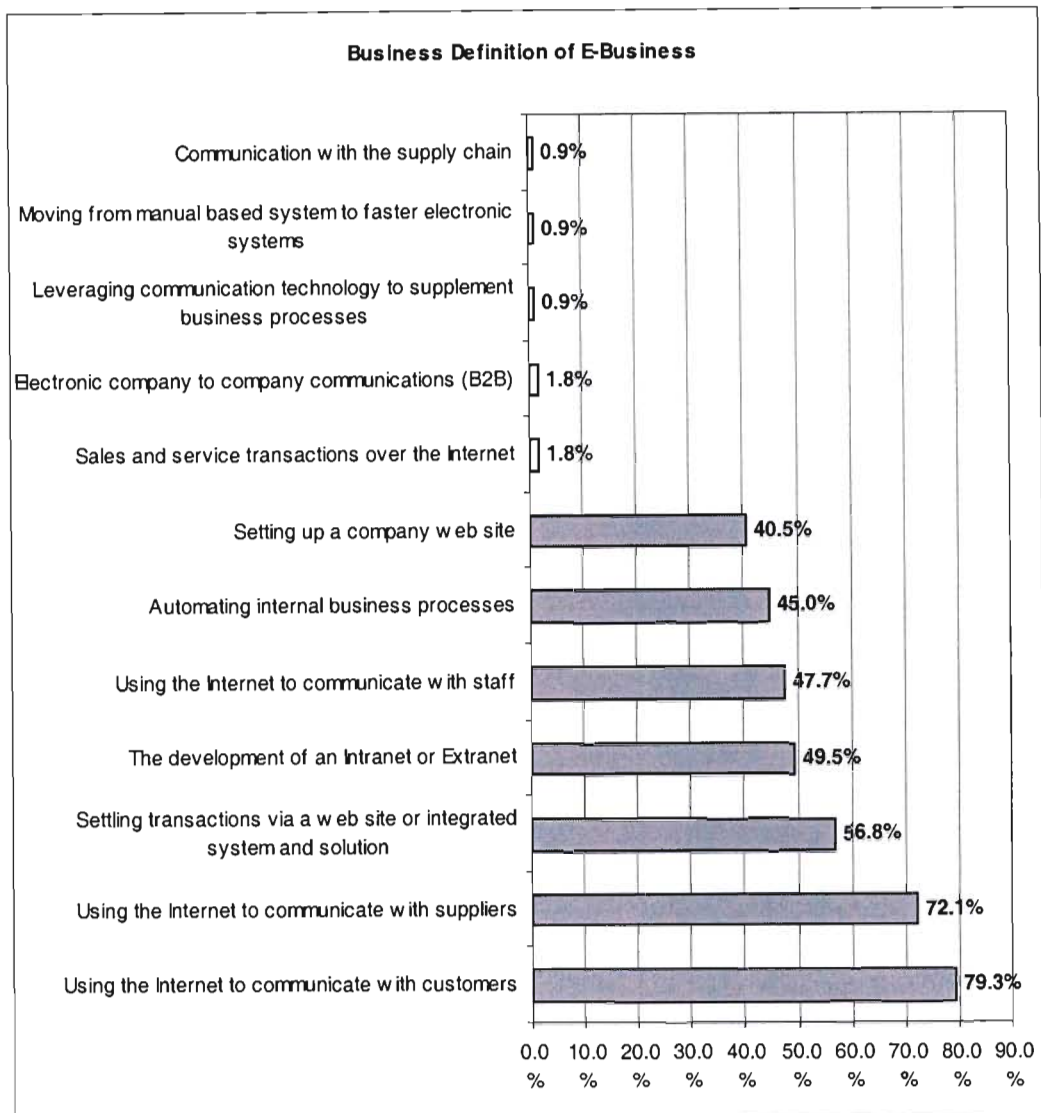


Figure 36: Definition of E-Business (Source: BMI-T, 2002)

The significance of this in the future is that true e-business adoption and integration characteristics will not be considered in the near future and the integration advantages of the Internet will not be effectively leveraged. Consequently, even if companies are aware of technologies, there still exists a gap between technology awareness and fulfilment and implementation. This seems to go against the net liberated organisation philosophy that Garter has proposed.

Company-to-company electronic communication or Business-to-business adoption could also be affected with the definition that this is not e-business.



On the positive side, companies are aware that transactions can be initiated and completed on the Internet. Also, e-business can link companies and employees together for communication purposes and that internal processes can be automated.

This implies that the current level of e-business awareness and definition thereof is limited to an internal focus on improving communication and linking internal systems. Also, this would imply that companies are focusing on an existing EDI base for internal transactions and external business processes. The full extent of e-business is not apparent as yet and companies are still operating in a fragmented systems environment. This is consistent with the findings that e-business is mainly viewed as a non-core business tool and that current implementation is used as a means of communication.

Current and Future Use of E-Commerce			
Application Area	In Use (%)	Planning to Use (%)	Unknown (%)
Using the Internet to communicate with customers	64.4%	33.9%	1.7%
The development of an Internet or Extranet	58.9%	25.0%	16.1%
Setting up a company web site	57.8%	12.5%	29.7%
Using the Internet to communicate with staff	57.8%	17.9%	24.3%
Using the Internet to communicate with suppliers	51.1%	46.4%	2.5%
Automating internal business processes	37.8%	26.8%	35.4%
Settling transactions via a web site or integrated system and solution	28.9%	44.6%	26.5%
Electronic company to company communications (B2B)	1.1%	0.0%	98.9%
To communicate with shareholders	1.1%	0.0%	98.9%
Multiple responses	n=90	n=56	

Table 20: Current and Future use of E-Commerce (Source: BMI-T, 2002)

Looking at the current and the future use of E-Commerce, in a multiple response survey, companies indicated that the biggest use of the Internet was to communicate with their customer base now and in the future. Communication with internal staff, setting up web sites for marketing and sales, and the development and use of intra- and Extranets have been identified as other uses for e-commerce. Respondents indicated that marketing and customer relationship management were the biggest



areas of business using the opportunities that e-commerce presented, whilst business-to-business sales or transactions were at a very low level of implementation (around 1%, Source: BMI-T, 2002).

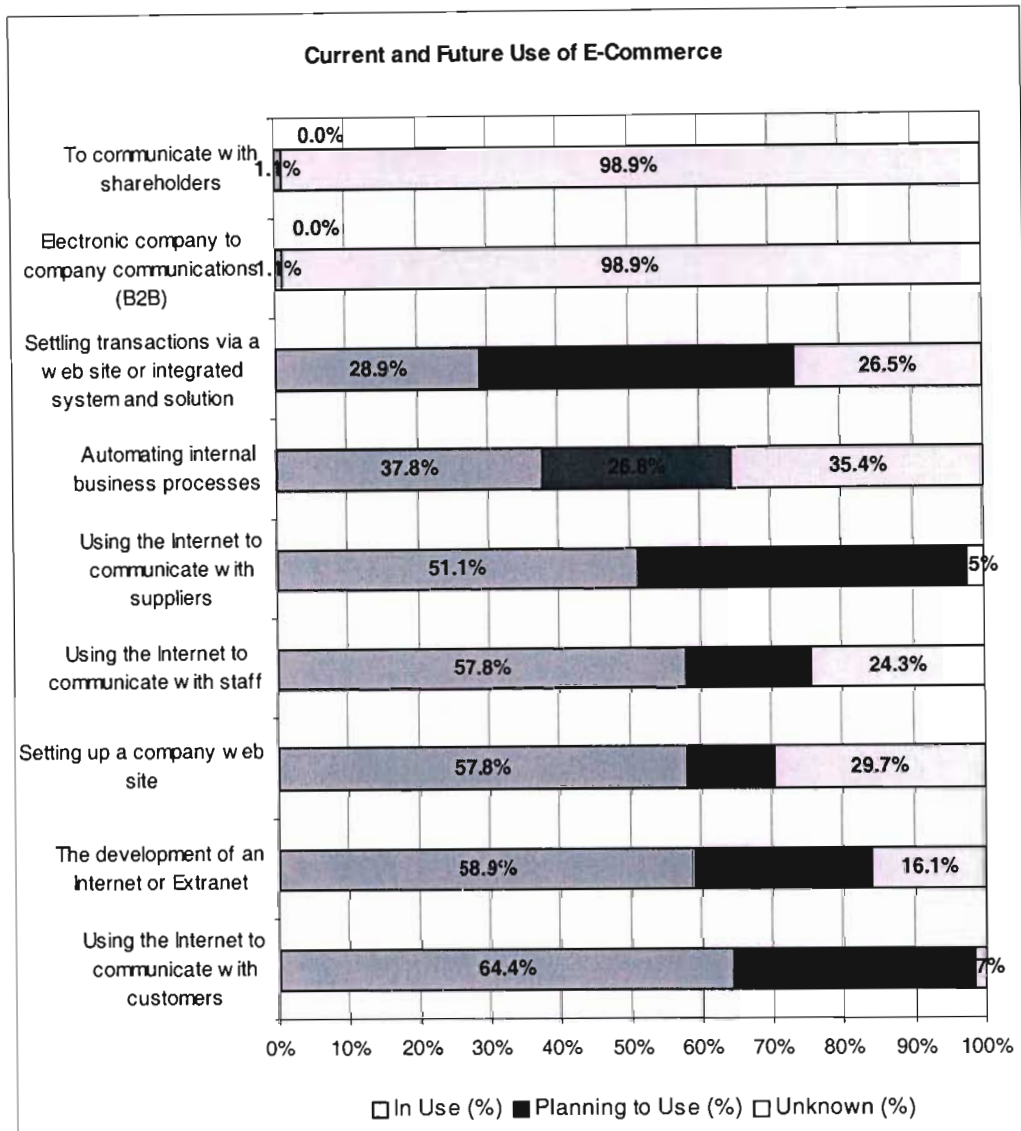


Figure 37: Current and Future use of E-Commerce (Source: BMI-T, 2002)

Electronic company-to-company communications is still a large unknown, consistent with previous data on the subject. The potential growth areas are transaction settling via the use of a web site or integrated solution as well as using the Internet to communicate with suppliers and customers. The last two growth areas indicate that supply chain management will become important to companies as system integration comes about. Already there is interest in automating internal business processes to



become more efficient, and it is therefore only a question of time until companies focus their energies and budgets in producing external integration with their internal systems. However, companies are still reluctant to use the Internet as a complete sales and procurement channel. The security of existing methods is perhaps one reason for this reluctance. When asked how soon the Internet would become an important tool for conducting e-commerce between suppliers and customers, responses indicated that there was some level of adoption at present, but that within two years, the level on implementation would effectively double from their present adoption rate.

4.5 OBSTACLES TO IMPLEMENTING E-COMMERCE

As indicated previously and verified on the above data, companies in general are reluctant in implementing e-commerce primarily due to security concerns. Lack of internal skills to handle the complexity of implementation is high on the obstacle list. Companies further recognise that even though complexity and skills are two obstacles, the cost-benefits of implementation are very high.

Obstacles to Implementing E-Commerce	
Obstacle	Percentage (%)
Complexity of Implementation	37.7%
Security concerns	37.7%
Non-core business	29.9%
High deployment costs	28.6%
Lack of internal skills	28.6%
Lack of internal infrastructure	18.2%
No business benefits	18.2%
Lack of funding	7.8%
Lack of insight	1.3%
None	1.3%
n=77, multiple responses	

Table 21: Obstacles to E-Commerce (Source BMI-T, 2002)



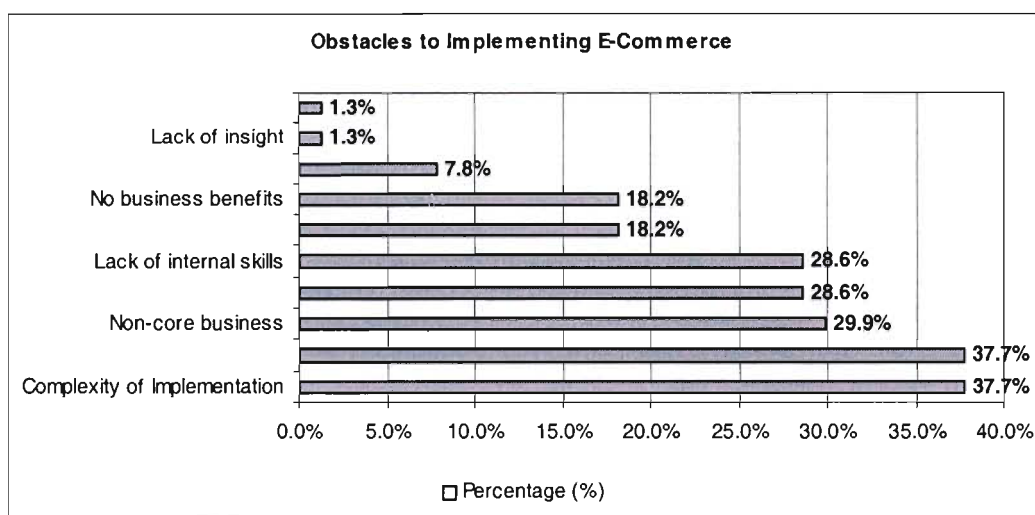


Figure 38: Obstacles to E-Commerce (Source BMI-T, 2002)

The only effective means to overcome these barriers lies in some form of integrative technology that effectively takes the existing vendor components and which translates this into some standard communication platform that is not vendor specific and conforms to some form of standardisation. In time, with the adoption of XML and EDI to XML translation tools become de-facto standard and when vendors integrate XML into their product offerings, then there may be a case for cost effective implementation of e-commerce by organisations. Security fears rely on perceptions. This can be overcome as technologies develop.

4.6 E-COMMERCE AND INTERNET CONNECTIVITY

The Internet is presently the most used method of connecting with suppliers, customers and business partners. However, there are indications that this will decrease in the next 18 months in favour of extranet-based connectivity.

This would indicate that there is a move towards business partnerships and private marketplaces or specific marketplaces.

Further as security technologies are adopted and business gains confidence in secure business-to-business transactions, so the uptake of extranet and VPN services will increase. In the future it is expected that VPN services will be used for intra-organisation connectivity whilst Extranets will be used for marketplace communications. Leased line connectivity will make way for virtual IP routing



negotiated with the telecommunications service provider at some nominal fee with a service level agreement and quality of service attached to the service allowing control over performance.

Method Used to Conduct E-Commerce with Suppliers, Business Partners and Customers		
Method	Currently	Within 18 Months
Internet (via web site or market sit or e-procurement)	45.1%	41.2%
Extranet (Managed ISP service or Intranet VPN)	32.4%	39.2%
VAN (3rd party managed VPN)	11.3%	9.8%
Dial-Up	11.3%	9.8%

Table 22: E-Commerce Methodology with Suppliers, Business Partners and Customers (Source: BMI-T, 2002)

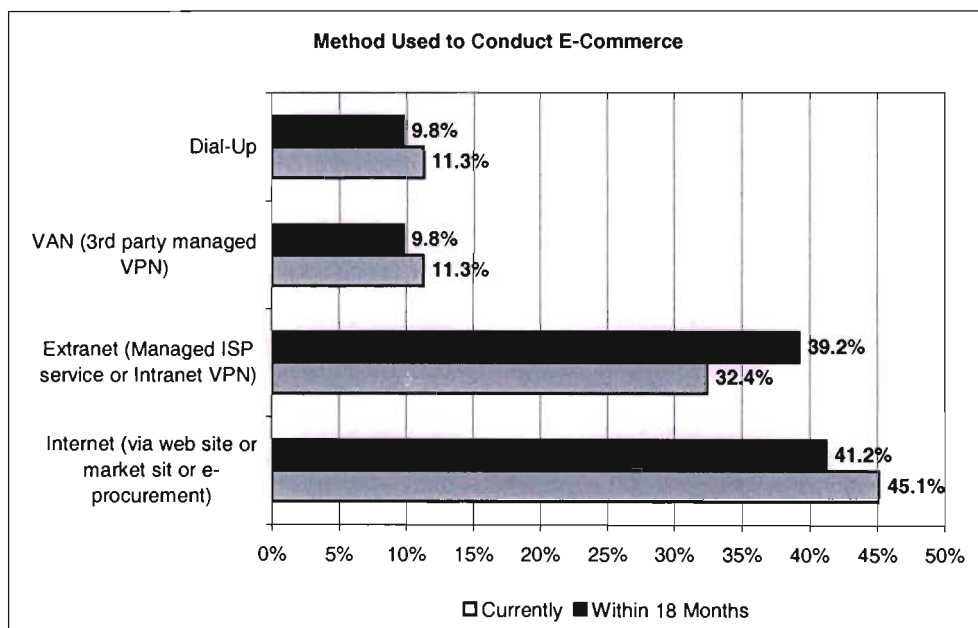


Figure 39: E-Commerce Methodology with Suppliers, Business Partners and Customers (Source: BMI-T, 2002)

The use of Internet connectivity cannot be ruled out completely due to its ubiquitous connectivity and access to services and communication world-wide. For this reason, Internet connectivity, it is predicted, will still be included in business models for the foreseeable future, but will loose ground to VPNs and Extranets.



Leased line is still the dominant form of access in the large corporate segment. The concept of VPNs and private networks have as yet not been fully embraced by business, and more importantly by the large business segment¹⁰. There is some indication that there is growth in this technology.

Satellite communication was considered as a part of another survey, and the data from that study suggest that there is a fairly low penetration and little interest in this form of access technology¹¹.

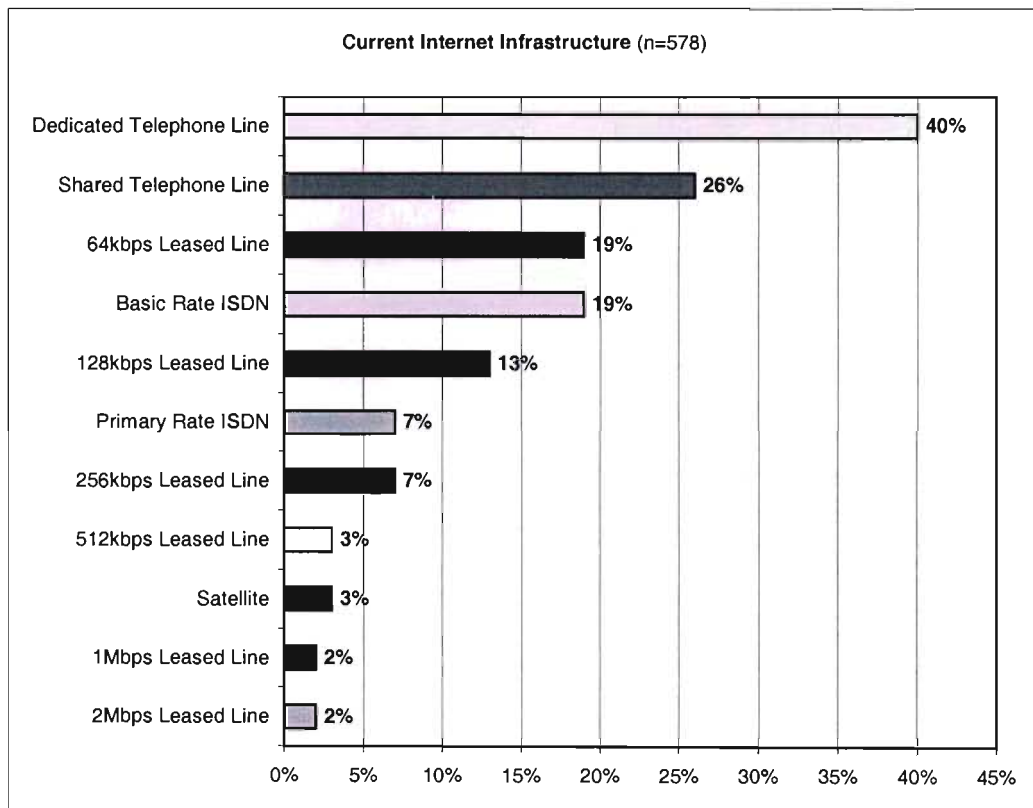


Figure 40: Type of Internet Connectivity (Source: BMI-T, 2001)

Examining Internet connectivity amongst companies that will have e-procurement and/or e-sales systems installed; reveals that currently there are a high percentage of companies with very basic connectivity. Some 85% of respondents only access the Internet via a dial-up service (either via ISDN or over telephone), which is of concern if B2B adoption is to grow. However, looking at this information along can be

¹⁰ Kolb C., Moller D., South African Corporate IT User Trends, BMI TechKnowledge Group, Report ES/201, 2002

¹¹ Hlophe N., Rotter M., South African Vertical Telecommunications Market Report, BMI TechKnowledge Group, 2001



misleading, since companies have more than one source of Internet connectivity the majority of which (46%) have leased lines ranging from 64kbps in size, to 2Mbps. This further analysis indicates that there are multiple services requested by companies and this includes back-up infrastructure, which could possibly account for the high proliferation of dial-up connectivity.

In another study done by Hlophe and Rotter¹² (BMI-T, 2001) in which they examine the South African Vertical Telecommunications Market, the cost of telecommunication services, and therefore connectivity, was the main reason for the lack of higher bandwidth services. One needs to place this into context though. Leased services provide a quality of service guarantee to the user and at the same time, multiple leased line connections are still used to connect to various sites and trading institutions, such as banks and other financial services.

The following is purely speculation on part of the author, but it is predicated that with the eventual uptake of exchanges and introduction of IP services to companies, there will be a convergence of services into one homogeneous IP service platform. This convergence will therefore necessitate higher bandwidth connectivity, but this will be in the form of few telecommunication services as all the IP services will be concentrated into one "pipe" and with this convergence, the VPNs and extranet connection will increase at the expense of dial-up services. Dial-up may well be rendered obsolete due to service level agreements and protection architecture improving quality of service and minimising down time.

4.7 THE IMPACT OF THE ECONOMY ON IT BUDGETS

Kolbe and Moller from BMI-T examined what the impact of the South African economy would be on the IT budgets for corporate companies and these are their findings.

In 48% of companies, the board has the final say in the approval of IT budgets, followed by a director specifically responsible for the IT budget (22%) and then by the CEO or managing director (10%). Interestingly the IT manager generally has little authority over the IT budget. This would indicate that IT is strategic to the business

¹² Hlophe N., Rotter M., South African Vertical Telecommunications Market Report, BMI TechKnowledge Group, 2001.



success of the organisation and that business rules not technology dictate the type of investment necessary for implementation. However, 61% of IT managers are involved in the formulation of the IT budget for approval, indicating the general responsibility for the IT budget still lies with the individual(s) that have the necessary technology expertise.

The general attitude towards the economy was negative with the consensus being that the state of the economy impacted greatly on IT spending (72%). Therefore, looking towards 2003, IT spend is expected to be relatively flat. Only 32% of companies foresee an increase in IT budget compared to 70% for 2001. What does this tell us with regards to growth in e-business adoption? Simply stated, spend is viewed as strategic and is being implemented on a project-by-project basis.

When asked to consider outsourcing of services, the industrial and resources sector followed by business and financial services, are the sectors with growth potential. The remaining sectors showed little interest to further outsource their IT requirements even though current spend with vendors ranged from 34% for other services sector to 61% for the industrial and resources sector.

IT budgets are predominantly driven by projects as and when the need arise and as the business rules dictate. Therefore, most companies are investing in IT cautiously against a measured return on investment and strategic intent. In the immediate future, e-business adoption is not expected to grow significantly across all sectors. Weak economic and business conditions demand strategic planning to balance fiscal and forward-looking e-business investment opportunities¹³.

¹³ Lehmann C., Optimize E-Business: Strategic Planning, www.zdnet.com, September 2002



CHAPTER 5: THE B2B MARKETSPACE IN SOUTH AFRICA

5.1 B2B POSITIONING IN SOUTH AFRICA

An attempt has been made to locate as many active B2B players participating in this market in South Africa. From media reports (ITWeb, 2002) it would seem that there has been some divestiture, with B2B companies having been sold off to other market players and competitors or closed down altogether.

The general consensus is that the B2B market in South Africa is experiencing slow growth and there are concerns that B2B adoption is lagging behind the rest-of-the-world due to financial critical mass not being achieved. Coupled to this the fact that South Africa is still in the early stages of adoption, lends to the fact that the B2B market is somewhere between the innovative and early adopter stage. The highly fluid nature of this market makes it almost impossible to predict the longevity of B2B companies.

During the course of this research, Internet based B2B companies have been found across various industry sectors and comprise of a mixture of private and public exchanges and together with the sector they participate in, they define their positioning in the market.

The current market drivers in the South African landscape are (i) MRO (maintenance, repair and operations) across horizontal industries; (ii) horizontal procurement services and (iii) private B2B initiatives with a focus on e-procurement to reduce costs and improve supply chain efficiencies. Private B2B initiatives are predominantly private, joint venture based exchanges.

The e-marketplace is currently dominated by buyers in the MRO and indirect space in specific vertical industries. There are numerous private exchanges, including financial service institutions that have entered the B2B market, but their focus is mainly on their existing corporate base.

Looking into the short-term future, BMI-T predicts that exchanges will move from indirect MRO procurement into the direct buy space. In the long term, only public B2B sites will gravitate towards becoming true e-marketplaces without the



dominance of either buyers or sellers. The joint-venture exchanges will in all likelihood continue to focus on cost-cutting and improved efficiencies in the value chain. It would seem that they should remain dominated by buyers.

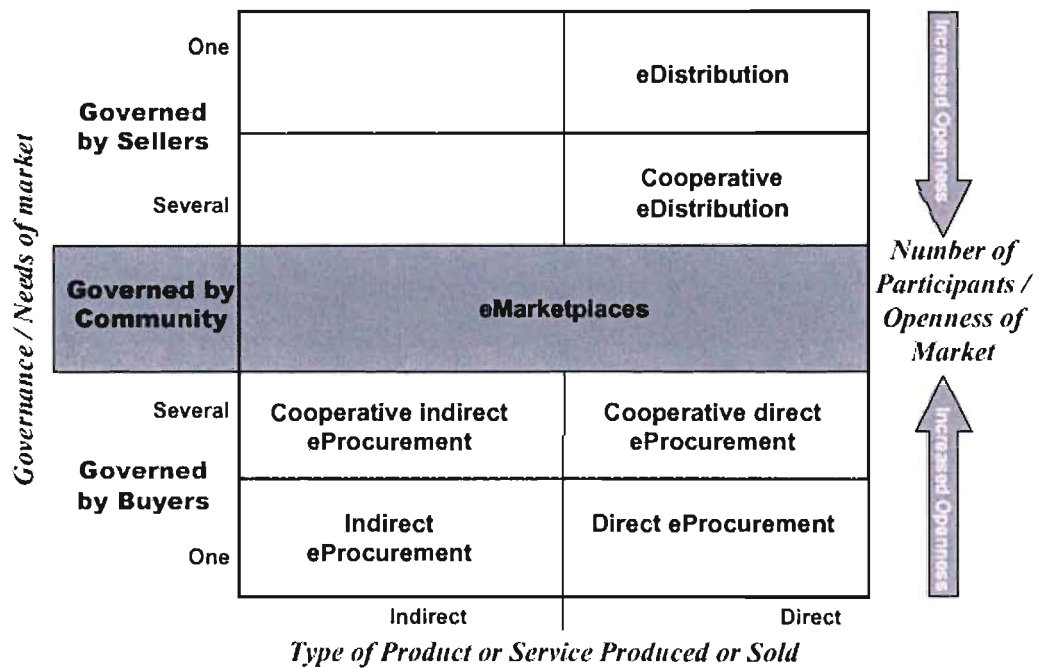


Figure 41: BMI-T B2B Positioning Model



5.2 B2B INITIATIVES IN SOUTH AFRICA

The following B2B market offerings and initiatives have been examined and are presented below. This list is by no means exhaustive, but represents a meaningful attempt in identifying all the role-players in the B2B market space in South Africa. B2C and C2C marketplace offerings have not been investigated.

B2B AFRICA

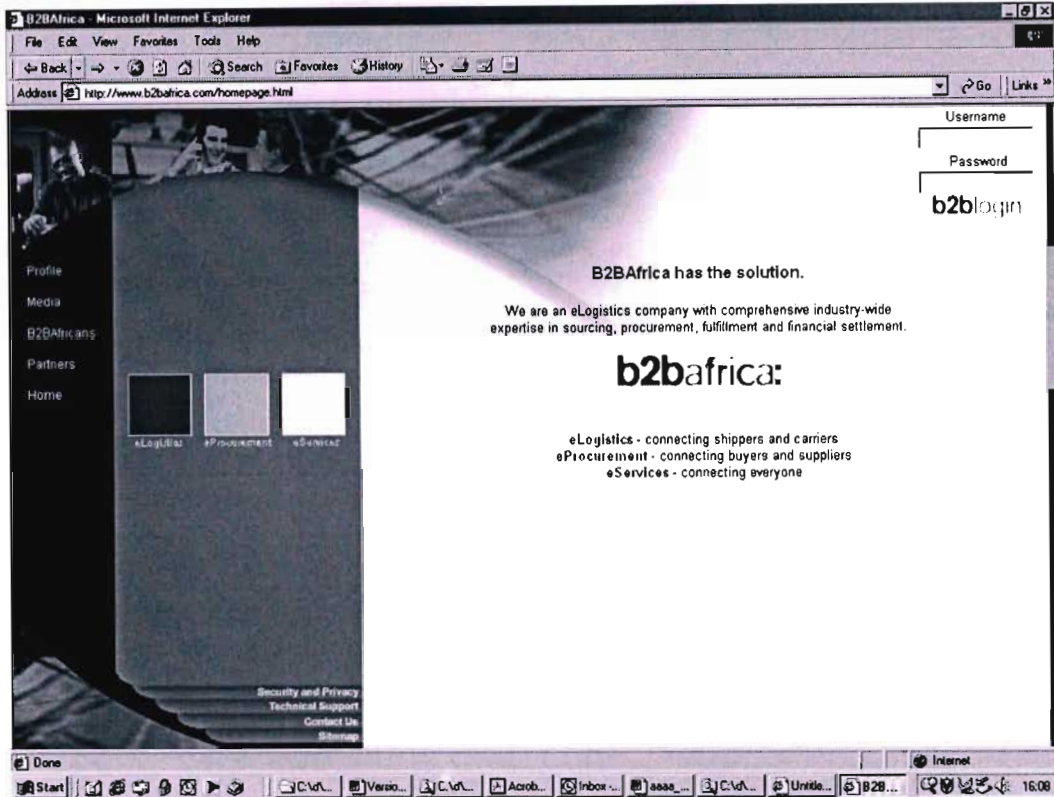


Figure 42: B2B Africa Internet Site

B2B Africa is a wholly owned subsidiary of Transnet set up to look into streamlining and improving internal procurement processes and thereby improving their competitive position in the marketplace. It has become a natural e-commerce extension of the parent company's core competency in providing logistic services to various industries. B2B Africa focuses on e-logistics to manage supply chains; e-services (both financial and transactional) as well as e-procurement bring together buyers and sellers.



It uses Ariba technology and has relied on outsourcing to IBM, Unisys and Arivia for implementation.

B2B Africa wants to position itself as a B2B portal into and out of Africa for world-wide trade. Even though this may be the long-term intention (becoming a public exchange), currently the company provides private exchange functions to several vertical industries and therefore is classified as a private vertical exchange. It is targeting more the manufacturing, mining and retail sectors.

Its strength lies in its direct involvement in Transnet, in that it can leverage its alliance to gain economies of scale in a very short space of time by offering its services to the Transnet group and thereby improving its commercial viability. From a regional perspective, effective supply chain management is a national strategic issue, as the cost of logistics and South Africa and the broader SADC countries remains high in comparison to global standards.

The business model is based on a once-off licence payment depending on the revenue of the company. It does not charge for transactions and value added services for maintenance and implementation are provided as part of the licence fee. The rationale behind this would seem to attempt to make the company financially successful in the short-term. Once transactional volumes increase, B2B Africa could be in a more stable position to offer its services based on a transactional/subscription business model instead of a licence based model.

The company officially launched in September 2002¹⁴ with the announcement of its successful pilot and implementation.

¹⁴ B2B Africa Announces e-Logistics Solution, www.ITWeb.co.za, September 2002



E-BUILDSMART

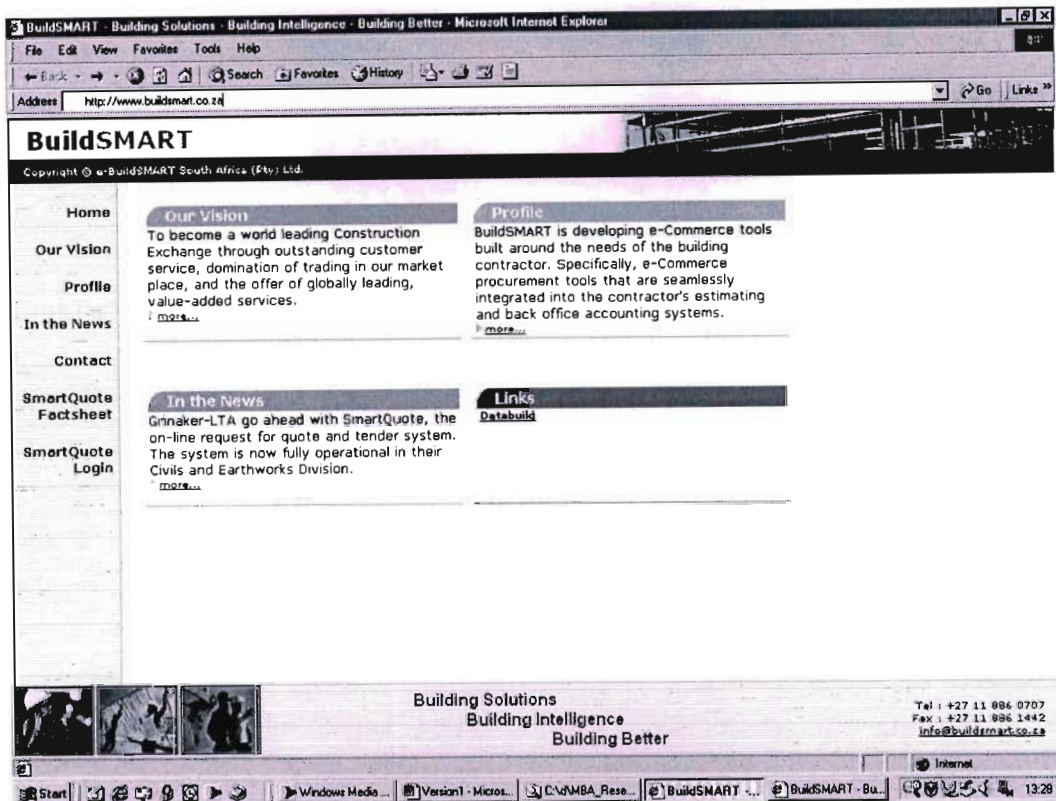


Figure 43: e-BuildSmart Internet Site

E-BuildSmart is a collaborative effort between Basil Read, WBHO, Concor and Stocks Civils, forming a private exchange in the construction industry in an attempt to improve supply chain efficiencies. The focus is on improving processes throughout the supply chain in an industry believed to be highly inefficient. Part of this vision is to integrate procurement tools with back-office accounting systems and provide logistic services to the industry. Transactional volumes can be decreased, thereby providing increased savings.

E-BuildSMART uses a subscription based revenue model and deals mainly in direct goods. Value added services are part of the B2B's strategy for the future. The site uses CommerceOne Contractor BuySite technology (providing easy integration into third party sites if necessary) and is assessable over the Internet via a browser.

The immediate strategy is to convince the players in the sector to adopt the technology and change their perceptions of B2B e-commerce.



BUILDZONE

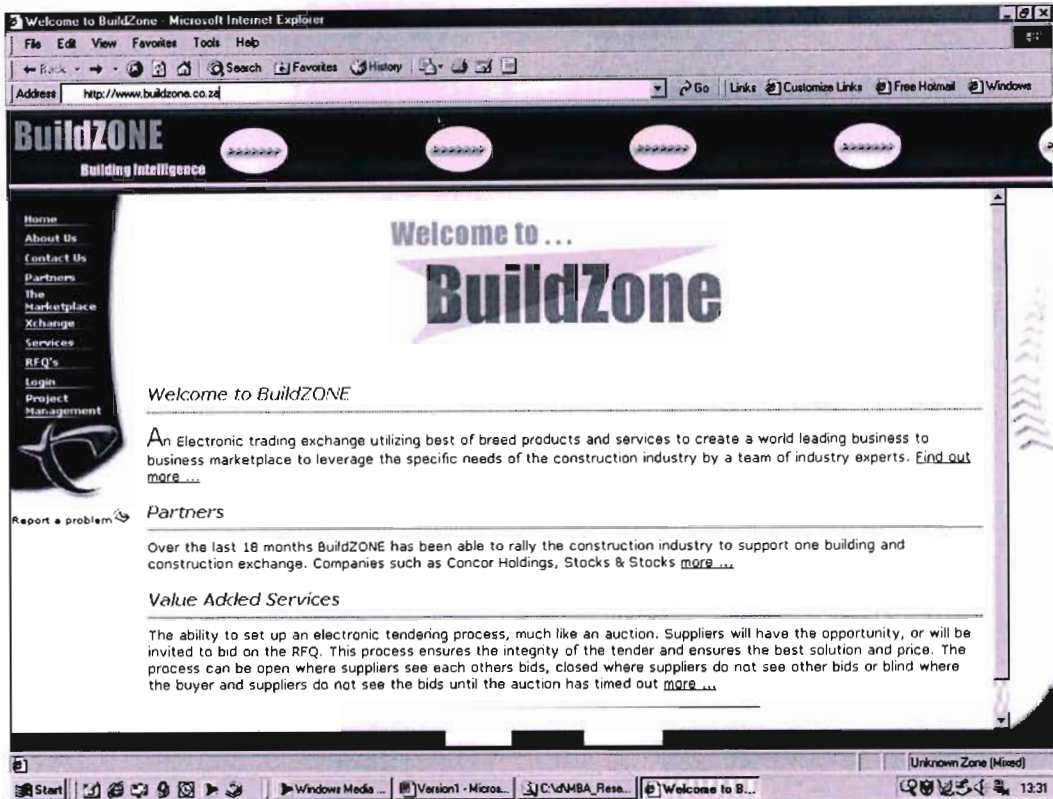


Figure 44 : BuildZone Internet Site

Buildzone is a public vertical exchange in the construction and building industry. It is in direct competition E-BuildSmart, but focuses more on e-procurement and enterprise resource planning. It intends in time to become the procurement and request for quotation (RFQ) portal within the industry.

The value proposition includes an electronic tendering process along the lines of a reverse on-line auction. Suppliers can bid on a request for quotation (RFQ) in either an open or closed bid situation. The intention is not to become a functional hub with the same product or service offering to various industries, but rather to remain in the construction industry and service only this vertical.

BuildZone is accessible through secure Internet technology and claims to be able to integrate with major customer ERP systems thereby facilitating the procurement solution. Collaborative buying is also supported where various buyers can come together and drive prices down through volume incentives.



COMMERCEZONE – MWEB

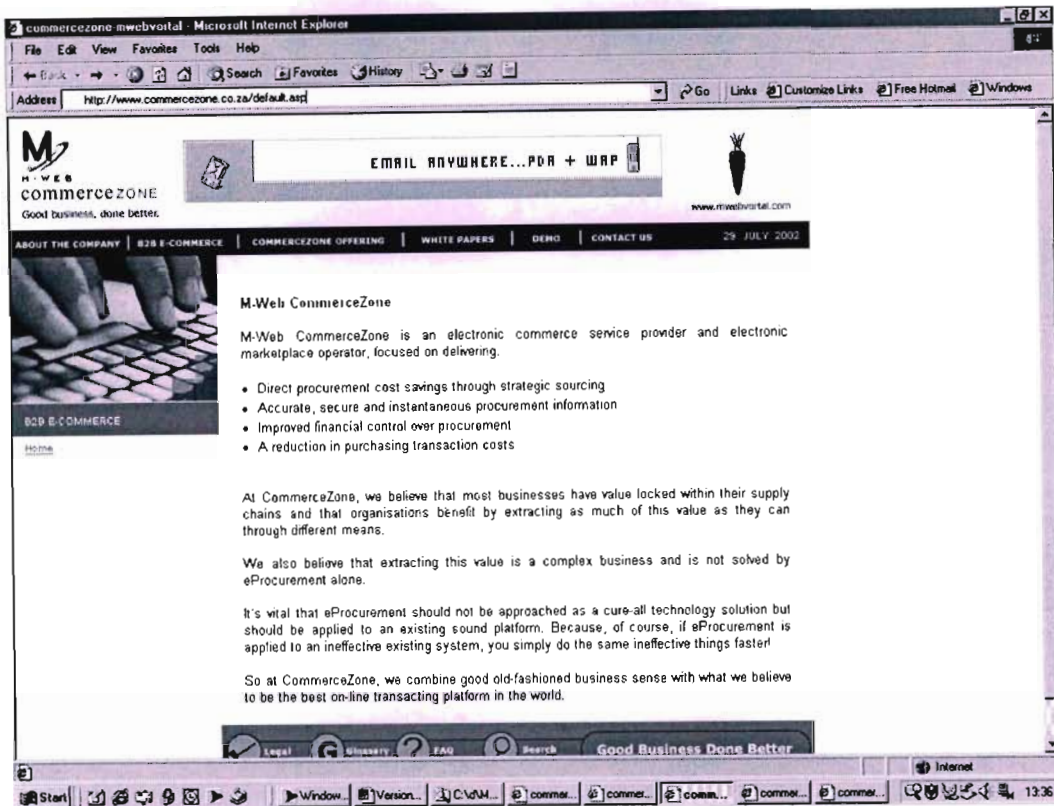


Figure 45: MWEB Commerce Zone Internet Site

M-Web Commerce Zone was launched in June 2000 as a vertically integrated portal for the Naspers, Multichoice and Educor Groups to leverage their combined spending power to strategically source goods and services from suppliers in order to achieve reduced costs through economies of scale. At the same time, procurement technology development led to process improvements.

M-Web Commerce Zone also became a natural extension of the experiences and technological know-how gained in the M-Web group. Consequently in June 2001, the site was opened to the public offering direct procurement cost savings through strategic sourcing, providing procurement information and reducing transaction costs. Presently, the site offers strategic sourcing in 27 commodity groups, providing supplier cataloguing and maintenance services.

The business model focuses on removing waste from supply chain before they are “e-enabled”. The company specialises in supply chain optimisation, e-strategy consulting, process re-engineering, change management and supplier activation.



Best practice process experience has led to Commerce Zone positioning itself as a leader in business-to-business enablement creating either private or public exchanges for clients using the mwebvortal.com platform.

The B2B site uses Commerce One browser based technology for its indirect goods offering focusing on both horizontal and vertical industries.

CYBERTRADE

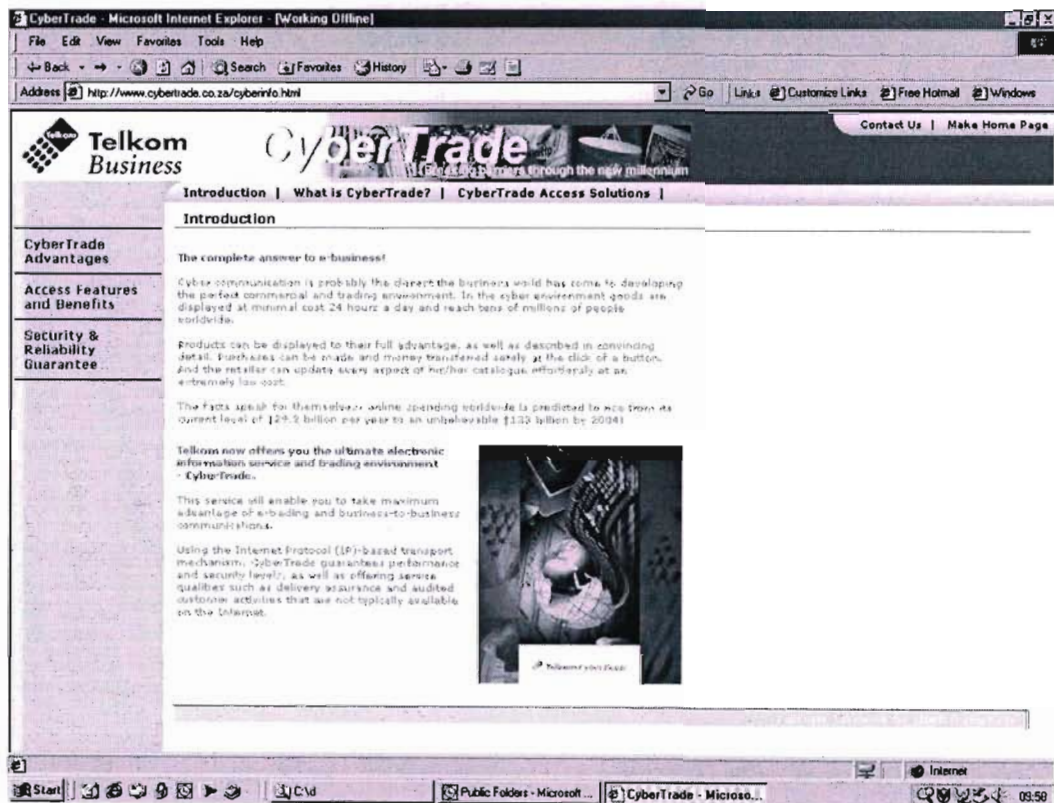


Figure 46: Telkom CyberTrade

CyberTrade by Telkom SA, is an attempt at creating a business-to-business portal for not only the exchanging of goods and services, but also as an Internet based business communication tool. It has positioned itself as an intermediary commerce portal for both buyers and sellers alike across any number of functional/horizontal industries.

As a result, it not only offers a virtual CyberShop or CyberStore for the buying and selling of goods directly, but also acts as a technology and communication go-



between for companies that want to trade over the internet using the Cyber Trade platform as a trading mechanism. Value-added services such as communication technology, EDI order processing, secure transactions and payment gateways are provided. Consequently, it is the only B2B site that acts as an Intranet extension for businesses. Virtual private networks and extranet services are also offered, making this portal unique as a B2B market offering, since these services and technology are normally offered as separate entities.

Therefore, CyberTrade has positioned itself not only as a horizontal public B2B and B2C trading portal, but also as a business communication portal to the South African industry as a whole.

MARKETSITE AFRICA

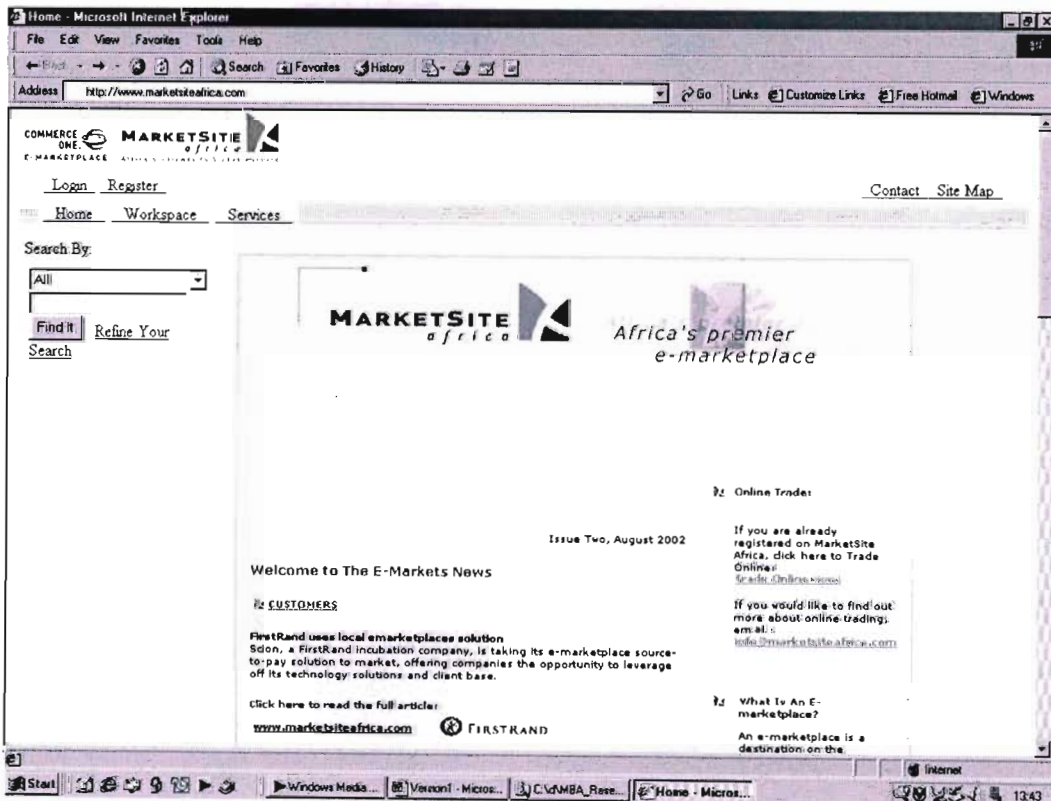


Figure 47: MarketSite Africa Internet Site

Marketsite Africa uses Commerce One for its technology platform and has positioned itself as a private exchange Internet Services Company as opposed to an eProcurement facilitator. It is 15% owned by Sasol, a strategic partner, the balance of



which is owned by Commerce One itself. The business model concentrates on providing content, business services, a transaction engine (e-commerce enabled) and a global trading link. Its intention is to provide global e-commerce services to buyers, suppliers, service providers and net market makers in the Sub-Saharan region in the auto, petrochemical, mining, utilities and aerospace sectors.

Buyers gain from gaining access to suppliers, products and services, stream-lined procurement processes, reduced resource costs and increased levels of control with an approved number of suppliers. Suppliers on the other hand, benefit from increased number of sales channels and reduced operational costs resulting from the elimination of manual processes via automation in the trading process.

The site offers more than just business-to-consumer services, but also facilitates on-line trading between buyer organisations and suppliers through cataloguing. Purchase orders to multiple suppliers can be processed in real-time through a single on-line transaction by mapping technology to business processes.

The revenue model and fee structure is based on the client, ranging from license fees to transaction-based fees.



MIRACULUM XCHANGE

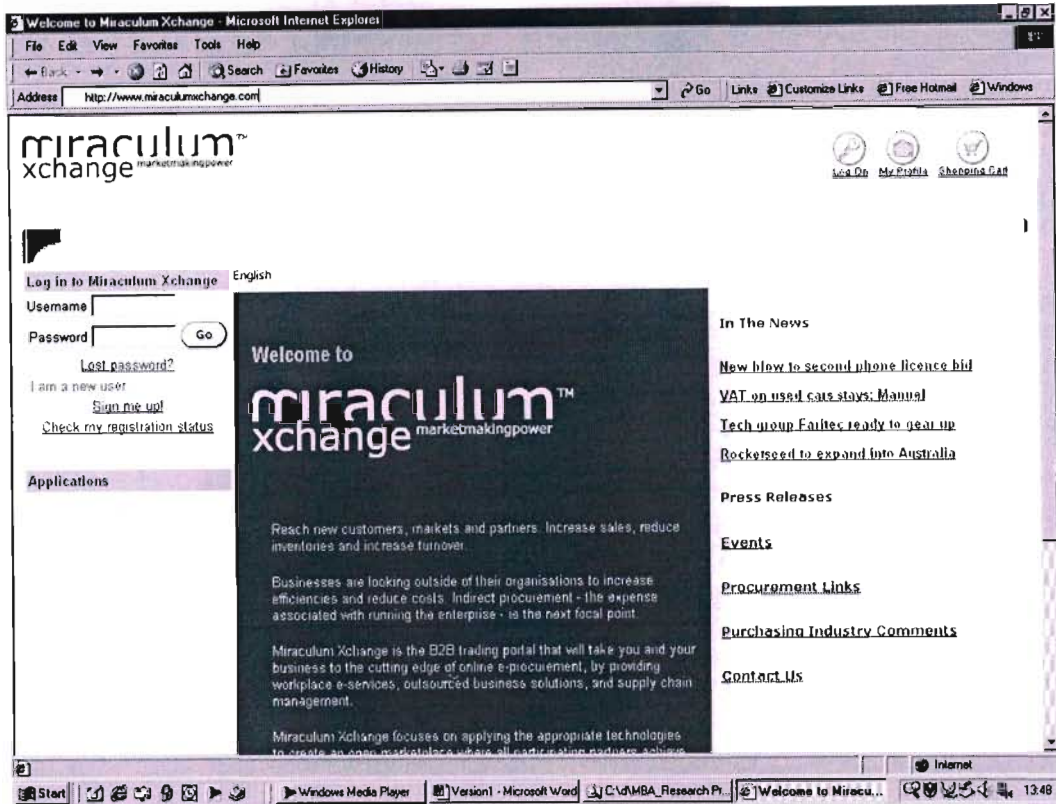


Figure 48: Miraculum Website

Miraculum operates as a browser-based private exchange with a view to becoming public in the near future. Its main clients are Dimension Data, Nedcor and Old Mutual, who are also the alliance partners. Current focus is on the automotive, consumer electronics and construction sectors, but the exchange welcomes other vertical industries using a partnering approach. The critical mass for financial viability, it seems, will come from providing services to the alliance partners.

Existing strategy centres on customising their existing software for the specific industry using ASP technology in providing predominantly eProcurement services. Oracle has been chosen as the appropriate Internet based solution for this purpose. In the future, industry based ASP customisation will take place improving the market offering.



MYMARKET.COM

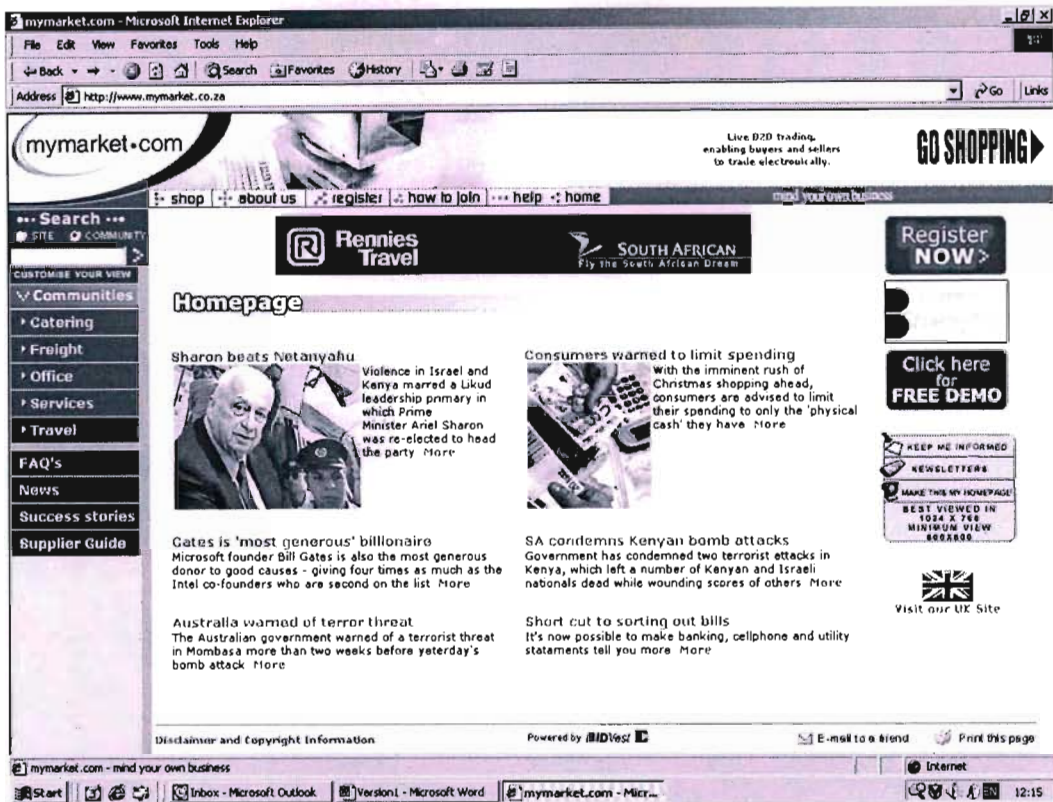


Figure 49: MyMarket.Com Website

MyMarket is part of the Bidvest Group (an investment holding company) operating in distribution, logistic and trading services, including light manufacturing. It is ideally positioned to provide the parent company with the e-commerce solutions to service the group in its entirety and thereby improving the internal business processes and achieving critical mass in the process.

It is currently an indirect horizontal private exchange focusing on the Bidvest Group in its solutions implementations, but it is planning move into the direct and public exchange markets. Its strength lies in the fact that the exchange can cater for a diversified number of industries from its offering within the Bidvest Group. Consequently, other companies outside the group can easily adopt solutions when the offering is made to the public sector by means of customisable ecommerce solutions.



Aqua Online was chosen for implementation, Microsoft for software and Commerce One for the browser based eProcurement technology focused on MRO goods and services.

Technology is implemented by means of “default roles” from which members and guests activate the preferred trading conditions based on their requirements. These default roles include administrators (for customisation), trading partners members and guests.

The revenue model is based on revenue from transactions and advertising.

PROCURETRADE

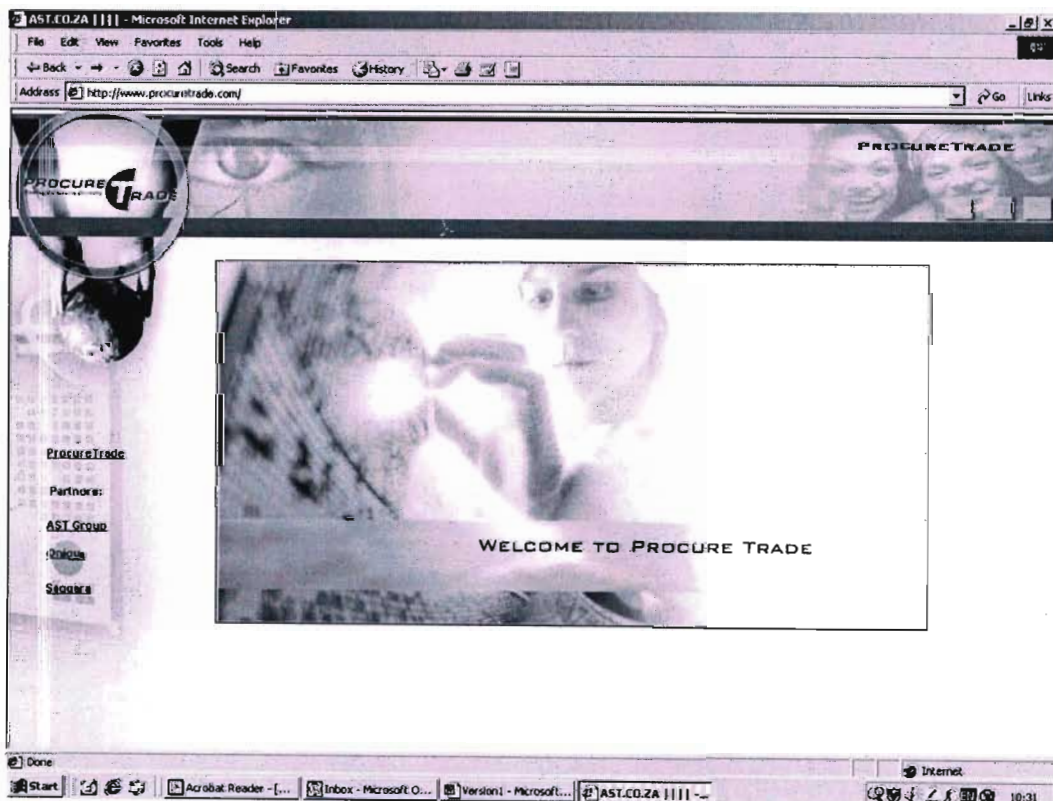


Figure 50: McCarthy Online's ProcureTrade Website

Together with strategic partners Barlow Motor Holdings, McCarthy Motor Holdings, Iscor, Engen and AST, ProcureTrade positioned itself in Automotive, Petrochemical, Iron and Steel industries delivering MRO (maintenance, repair and operational spend) with the long-term view to move down the value chain.



It currently operates in the horizontal indirect goods and MRO market and classifies itself as a private browser based exchange. Revenue is based on joining, hosting, transaction and services fees. Implementation, integration, cataloguing, maintenance and content management are amongst the services offered by the B2B exchange.

ProcureTrade quotes that on average, the cost of procurement can be as much as 20% down from normal sales channels via its e-procurement ASP hub due to buyer aggregation and improved procurement efficiencies¹⁵. Payments are done electronically, further improving efficiencies, thereby avoiding paperwork in the process.

Due to start-up and front-end procurement engines, revenue streams from the exchange is still small, but is expected to grow. However, ProcureTrade expects further revenue streams from integration and enterprise hosting services to clients using the exchange. The B2B exchange wants to enter into the global e-procurement environment, but concedes that the value of the transactions and items must be high enough to warrant the cost.

The exchange places high emphasis on creating customer value through strategic synergistic and collaborative efforts on behalf of suppliers and procurers. Technology is not based on any one platform, but in the best of breed for the particular vertical industry that they are rendering a service to.

¹⁵ de Klerk G., Part 5 – The E-Business Focus of AST Group, <http://ml.mny.co.za>, 2002.



QUADREM

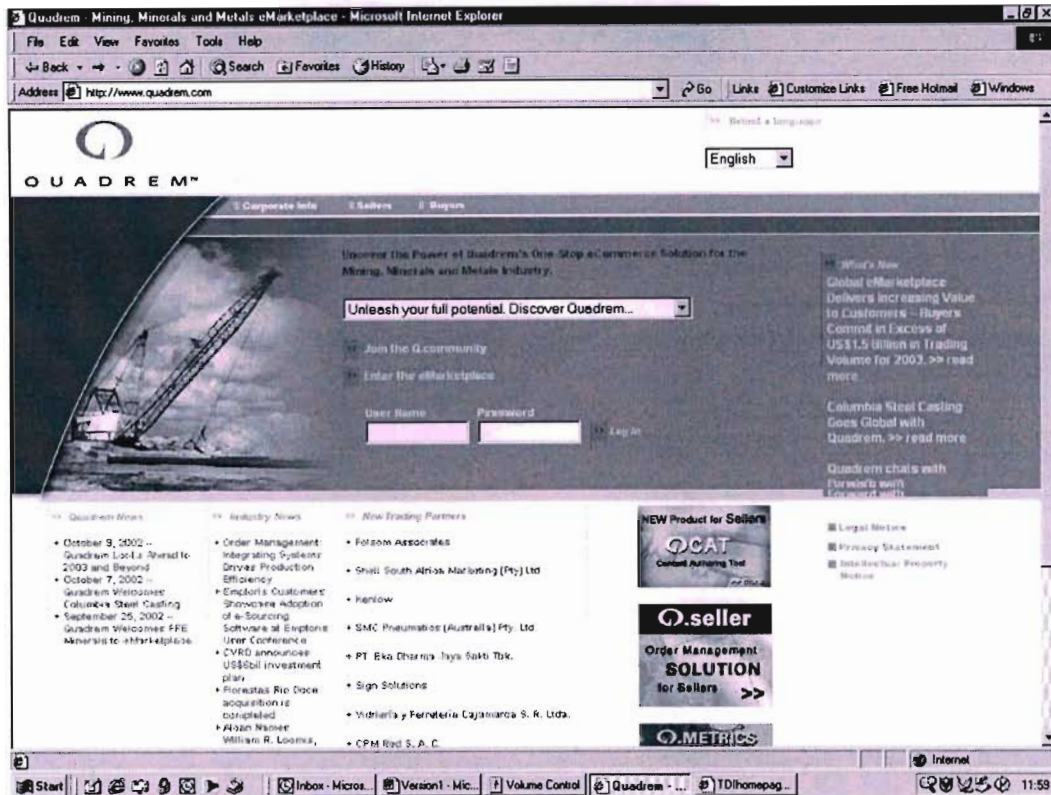


Figure 51: Quadrem's Website

Quadrem positions itself as a one-stop shop for the mining, minerals and metals industry. It is a private vertical exchange by definition specialising in order management to decrease production inefficiencies. It also acts as a portal for the industry providing current news and relevant industry based information. Revenue is based on transactions, and in an industry where transaction volume is low, but value is high, cost of maintenance of the site is generally lower in comparison to its competitors.

It has recently (mid 2002) started promoting vendor products on its portal site, further increasing revenue streams by acting as a advertising source and intermediary.

SCION

SCION, a First Rand offering, does not have a web presence due to its choice to remain low-key in the marketplace. It defines itself as an indirect, horizontal private exchange offering corporate clients the following solutions:

An Examination of E-Business Adoption by South African Companies
Author: Mario J. Paes



- E-Procurement through BuyIT (branded First Rand market offering)
- Sourcing solutions
- Invoicing – internally generated through First Rand
- Electronic billing and Financing - internally generated through First Rand
- Hosting solutions – through BuyIt

SCION's intention is not to become a buying hub, but instead to facilitate buyers and sellers and become a buyer aggregator. Services offered are customised to client's needs and revenue streams follow from the value-added services offered, especially from financial services. SCION differentiates itself from other competitors primarily by facilitating payments, credit services and foreign exchange on a securely guaranteed platform. Security is one of the main market differentiators.

Financial revenue is based on a percentage of order value, to a maximum value, whereby a fixed charge is levied.



SMARTSHED



Figure 52: Smart Shed Website

The Smart Shed is a joint venture (JV) between major goods industry players and leading IT and logistics companies. Steinhoff (supplying goods), Comparex (for IT) and Unitrans (logistics) are the partners in the JV, while Lewis, Proform and Relyant are retail partners.

The Smart Shed positions itself to provide Africa's household goods industry with collaborative supply chain integration, ranging from raw materials to finished goods and onto retailers. The primary object is to optimise supply chains resulting in cost savings. As a virtual business, the operational staff is kept to a minimum, relying rather on JV partners to provide the services.

Using buy-side and sell-side solutions, order-placement and order-fulfilment are integrated into their collaborative operational model. Their positioning in the market, is one of the few market offerings that can claim to be both e-procurement and e-sales ready operating as a direct, vertical private exchange.



They also provide value-added services for its members, such as e-readiness measurement, change management services, value assessment, business intelligence and content hosting.

THETRADESTANDARD

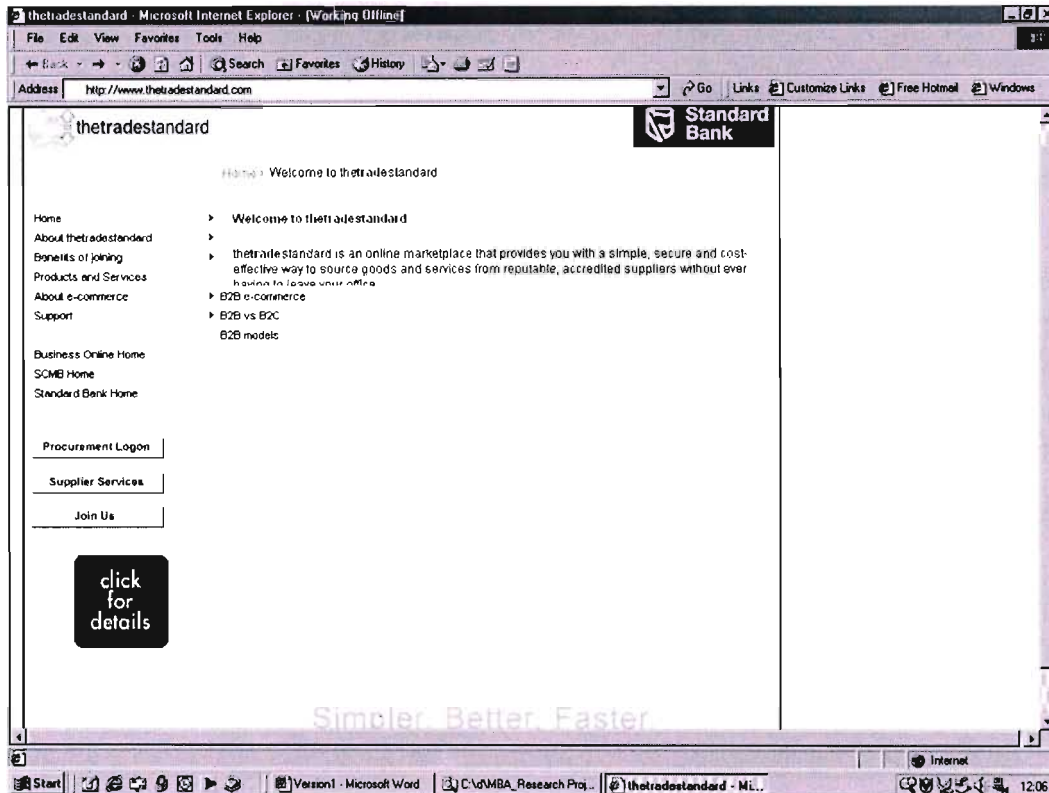


Figure 53: Standard Bank's thetradestandard Web Site

The exchange is open to the public if they meet certain trading conditions. The site specialises in electronic bill presentation and payment through Standard Bank. Security and competitive advantage are provided through Standard Bank and the site leverages the parent company's brand extensively.

The site targets MRO spend in corporate South Africa, and revenue is subscription and transaction based. Products and services include:

- Online ordering
- Computers, peripheral and networking equipment
- Copiers, fax machines, printers
- Office supplies.



Chapter 6: Conclusions and Recommendations

Technology stocks have taken a battering over the last two years, yet the demand for e-business continues to grow (Andrew Hardie, KPMG Consulting) with companies wanting to derive more value from the technology. Even though e-commerce is still being met with scepticism, the value and business case for adoption are starting to emerge. Current B2B exchange offerings focus primarily on cost reduction measures in the value chain. The drive to implement e-commerce solutions is not solely based on business terms, but also on the fact that companies are starting to realise that B2B e-commerce is not consumer oriented, but is based on business principles. When correctly implemented, optimised information across the supply chain, cost reduction, increased customer satisfaction and improved collaboration with business partners can be realised.

The B2B marketplace in South Africa is not without its challenges. Skills are a major inhibitor, with three criteria, (i) IT skills, (ii) e-commerce skills and (iii) industry knowledge being the most important areas. Other inhibitors include financial costs of implementation, complexity and understanding of the technology and what it can deliver. Effective planning for a successful e-commerce strategy in the enterprise is necessary. These findings fall in line with the Ernest and Young/Cap Gemini study done. It would seem that the same problems facing South Africa are not geographically localised, but instead a worldwide problem.

Small company adoption of e-business is alarming low and is confined to larger organisations with greater financial muscle. This is of concern since this affects their future competitiveness. E-sales and e-procurement levels of adoption are also low with collaborative solutions being favoured over adoption of supply chain management. Order fulfilment may be affected as a result of a lack of system integration. This is echoed in business priorities and perhaps this is due to little understanding of the full benefits of e-commerce. However, that is not to say that improving efficiencies, is not important, just that relationship management seems to be getting the lion's share of attention.

High costs and complexity of deploying enterprise wide e-commerce solutions is hampering adoption. With new technologies emerging such as XML and business



confidence growing in security, the entry barriers to e-commerce should decrease for smaller sized companies. Within the next two-to-three years, the author predicts that there will be a significant uptake of e-commerce services as offered by application service providers (ASP) in the form of functional public B2B exchanges and consortia based vertical private exchanges. Technology costs can be shared and barriers to implementation will come down further as the industry standards converge.

Medium and large sized companies should formulate and implement some form of e-commerce strategy, irrespective of the current levels of adoption. Of importance is that the South African government has recently (end-2002) put in place an e-strategy task team comprising of local and international industry experts, in order to assist with e-commerce policy as well as look into a strategy for government departments. This is long overdue since the lowest levels of adoption exist in the government sector where service delivery is poor. In the South African context, it is government that stands to gain the most from e-commerce adoption through streamlining services and service delivery. Procurement, especially Black Economic Empowerment procurement, is in the forefront of government initiatives. South Africa also stands to gain from international trade through more effective use of e-business.

On the other end of the spectrum, the financial sector has and should continue to have the highest level of e-business adoption and IT investment when compared to other industry segments. This is not expected to change in the near future as return on investment is highest in this segment.

Security will remain the main enterprise application with resource management and CRM tools high on the demand list. CRM and ERP will continue to dominate the retail and financial sectors, as companies become more customer focused. Hand-in-hand with this future trend are business intelligence systems interfacing to other applications in order to provide information to the enterprise as well as market related trends for better decision making. However, cost of integrating back-end systems may prove to be cost prohibitive for some companies.

Communication channels will increase in importance as companies wish to improve the customer experience and attract and retain their customer base. Collaborative applications have the highest adoption in the financial sector as opposed to the public sector having the lowest adoption figures. This highlights the importance of



these tools as internal communications channel improve process efficiencies, a major problem with the public sector.

The fundamental question then is finally asked, "What conclusions can be made with regards to the adoption of e-business by South African companies?" and "What role is e-business influencing South African competitive advantage?"

Customer relationship management, supply chain automation, knowledge management and operational efficiencies findings overlap those of the Compass World IT Strategy Census 2000 (Lawrence et al.). Consequently, conclusions can be drawn whereby South African IT and e-business strategy follows world trends.

From a market segment perspective, the financial sector, which provides services throughout all marketplace value systems, has the highest adoption of e-business. The reasons for this are not hard to find since the main drivers are cost and service delivery. Transaction and overhead costs can be kept to a minimum, whilst interfacing to an integrated back-office provides better system reliability and efficiency. On the other hand, the public sector is a poor adaptor of e-business, something that is currently being addressed by President Mbeki's government through the workings of the e-strategy task team.

Interestingly, e-business adoption varies according to the position in the value chain. Primary industries have little value for e-procurement systems and e-sales systems offer marginal competitive advantage. As the value and volume of transactions increase, so does the importance and adoption of e-business. This is a clear business proposition. The wholesale and retail and the manufacturing sectors have a greater need for Internet based sales and procurement systems as well as ERP applications. The demand for logistics is highest in the Industrial and Wholesale and retails sectors, indicating the need for business systems integration.

It can be concluded that the e-business component adoption is dependent on the market segment and based on a needs analysis for inter-organisational communication within a specific segment. This is encouraging for competitiveness, but the lack of full value chain integration along vertical and later across horizontal lines, needs to be addressed. If e-business continues to develop across vertical lines only, then true competitive advantage across the whole industry will not materialise.



The need for B2B exchanges varies according to industry needs. Where extensive buying and selling is required (e.g. retail sector), so the adoption trend for B2B exchanges and portals is highest. As one moves along the value chain, so the need for B2B exchanges increases. Major B2B initiatives have been driven by corporate companies through alliances and collaborative efforts through indirect funding or as subsidiaries. Major adoption is driven by e-procurement (buyer aggregation) and MRO (maintenance, repair and operations) services to reduce costs.

Economies of scale will be the main factor for success with some consolidation, especially in the public domain. This depends on the market seeing value in the proposition. The B2B market is currently dominated by private vertical exchanges. There are some exchanges providing services to the industrial sector with relatively few public exchanges.

The next factor of success would be content packaging for value creation. In a vertical private exchange, this is easier to control since the packaging is specific to the role-players. However, as soon as the exchange spreads across industries (horizontally) or as soon as it becomes public, the costs incurred may make the exchange financially unfeasible. As a recommendation, until technologies such as XML and the connectivity costs come down, private B2B exchanges should primarily focus on achieving value creation to the alliance partners in order to increase their competitive advantage.

With disintermediation taking place, intelligent enterprises are emerging. Customer relationship management and business intelligence adoption is on the increase in South Africa, which can only lead to better management and decision-making processes. In the South African context, it would seem that the adoption of e-business is happening, which is encouraging, but there is still a fundamental gap between present e-business implementation and commitment across functional lines. Evidence of clear understanding of full e-business architecture in the intelligent enterprise is still some way off with larger companies leading the way.

Implementation of e-business varies according to company size. This is a point of concern, since it is the small and medium size business sector that creates employment. This segment of South African business must start adopting e-business more aggressively in order to become internationally competitive. This is important in the current globalisation context. As stated previously, opportunity costs are still too



high for wide-scale adoption by this sector of the economy. Hence the need for more cost effective technology solutions in the public domain. This is merely a question of time as new technologies emerge and possible direction given by the government's e-strategy task team.

In general, it would seem that larger companies have identified the critical links between e-business drivers, financial indicators and operational measures. This is reflected in the adoption of business intelligence for data sharing as well as implementation of IT and telecommunications infrastructure. Database support and supply chain management system integration have received some attention, with the bulk of adoption going to CRM and other customer oriented technologies.

Looking beyond 2002/2003, it is predicted that B2B exchanges will begin to offer multiple transaction mechanisms and serve both industry verticals and cross-industry markets, thereby evolving into true e-marketplaces. E-commerce will begin to evolve into e-business whereby the functional elements of e-business will be integrated into business process and business automation in South Africa. This is not the case at present. The widespread use of XML will begin to dominate e-business, given the fact that it is an inter-organisational driver. Business leaders must begin to educate their organisations in this technology, or fear being left behind and not having any idea of how this external factor will affect their business. It is predicted that there may be a growing need for new intermediaries to mediate, translate and exchange between exchanges. This is possibly a new business opportunity as no evidence of intra-B2B communication offerings could be found. Critical mass for the success of public exchanges will become critical, but it would seem that private offerings are not as financially exposed.

There will be a growing need for ISPs, web hosting and application service providers, driven by outsourcing in the small and medium and micro enterprises. Cost of connectivity (via the Internet), must be addressed for successful and cost effective B2B solution to take place. Limited bandwidth and security issues are major inhibitors for successful B2B and sustainable competitive advantage.

Finally, thorough attention to e-business as a strategic tool, not as a technology, must be addressed. Value creation and global competitive advantage are reasons for e-business integration into business strategy. Only then can the "e" be removed from e-business in its transformation to normal business practice.



GLOSSARY OF TERMS

ASP – Application service provider. A company that gives you access to a software package over the Internet, usually for a monthly fee. The ASP upgrades the software as needed and maintains the infrastructure to support it.

Bandwidth – The maximum amount of data that a network cable can carry or that is restricted to. This is measured in bits per second (bps).

Browser – A software application used to search information posted on the web.

DSL – Digital subscriber line. A high-speed access service to the Internet providing a “always-on” connection.

E-Business – E-Business encompasses the Internet and e-commerce and revolves around the integration of business systems, applications and automation creating electronic interconnections of business processes with the trading organisations (customers, suppliers, business partners)

E-Commerce – Includes all forms of Internet commerce, as well as other forms of electronic trading conducted over private or proprietary networks, including electronic data interchange (EDI) and dial-up based systems.

EDI (electronic data interchange) - A standard format for exchanging business data. A transaction set often consists of what would usually be contained in a typical business document or form. The parties who exchange EDI transactions are referred to as trading partners. EDI messages can be encrypted and decrypted. EDI is one form of e-commerce. It is often dial-up based, but there is significant migration from traditional EDI to Internet based systems.

ERP (enterprise resource planning) – ERP applications refer to enterprise applications for any industry covering four main areas:

- Accounting or Financial
- Human Resource and Payroll
- Manufacturing
- Distribution



Implementation – The actual setting up of IT hardware and software infrastructure needed to undertake e-commerce.

Internet – The global network of computers, routers and cable connections that enables the world's computers to connect to each other. The Internet is TCP/IP based.

Internet Commerce – a subset of e-commerce and includes the following

- Order placement via the Internet
- Payment authorisation or funds transferred via the Internet
- Providing information, services or products delivered via the Internet regardless of how it is being ordered or paid for

Transactions do not have to be completed over the web, but the transaction must be initiated over the web.

ISDN – Integrated Services Digital Network. A telecommunications standard for sending data signals, digitised voice and video over the existing public switched telephone network.

ISP – Internet service provider. A company offering Web access and/or other services such as Web design, hosting and security.

LAN – Local area network. Workstations and computers that are connected in a specific work area in the general location and within a single legal entity.

Router – a device that connects two networks.

SCM (supply chain management) or SCI (supply chain integration) – The linking of the multiple stages in the conception, development, manufacture, assembly and delivery of goods and services.

SCA (supply chain automation) – Involves the use of electronic networks to achieve SCI, preferably with reduced human intervention.

SME (Small and Medium Enterprises) – Refers to company size using financial and/or staff complement.



VAN (value-added network) – Third party managed data networks including advanced messaging services such as enhanced fax and EDI.

VPN (virtual private network) – Private partitioned networks residing on and transporting data over the global public Internet. IP VPNs combines the security of a private network with the scalability and pervasiveness of the Internet. VPNs are also implemented on private IP based networks and offer secure IP based transport as well as secure access to the Internet.

Web Commerce – Considers those Internet based transactions that take place using a browser via the World Wide Web.

Web Portal – A web site that is a major starting site for users when connecting the web or that users tend to visit as an anchor site.

WAN – Wide area network. A geographically dispersed network connecting two or more LANs.

World Wide Web – The vast network of information and resources that is used to communicate and trade via the Internet. A network of servers support the hypertext connections using hypertext mark-up language (HTML) and the hypertext transport protocol (HTTP).



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