ENABLERS AND INHIBITORS OF ELECTRONIC COMMERCE: AN AUSTRALIAN STUDY

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A thesis submitted to Victoria University in fulfillment of the requirements for the degree of Doctor of Business Administration

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Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signed: 

Abstract

The research undertaken for this thesis identifies the benefits, challenges and success factors of electronic commerce in Australian companies. This research was conducted in four phases: literature review; semi-structured interviews with seven well-established companies located in Melbourne and Sydney; postal questionnaire survey of top 500 Australian companies; data analysis and findings.

This research identified and described the considerable benefits that companies engaged in electronic commerce have achieved. The major benefits of electronic commerce identified included improved image, competitive advantage, business efficiency, increased automation of processes and customer loyalty.

To position themselves to benefit and be successful in this new way of doing business, it is important for businesses and organisations in Australia to overcome the inhibitors and challenges of electronic commerce. The research identified and described the major challenges of electronic commerce, which included integrating front-end electronic commerce to back-end systems, technology costs, lack of electronic commerce knowledge, managing change and acquiring IT skilled people.

Finally, the research identified and evaluated factors that business organisations can depend on to add value to their businesses and contribute to the further development of electronic commerce. The major electronic commerce success factors that can be used by managers and project leaders to effectively adopt electronic commerce included effective project leaders, secure transactions, rapid delivery, top management support and more personalised customer service.

CHAPTER ONE INTRODUCTION

1.1 Introduction

For the purpose of this thesis the definition of electronic commerce is a combination of definitions established by several authors. It includes buying and selling goods and services electronically, sharing business information, maintaining business relationships, conducting business transactions by means of telecommunications networks, placing orders, checking inventory levels or invoice status and payment of bills (Whinston et al, 1997; Hannon, 1998; Schneider and Perry, 2001).

Electronic commerce encompasses a wide range of activities that enable all inter-company and intra-company functions (Aberdeen Group, 1997, Commonwealth of Australia, 1999), fostering the exchange of business transactions in a more cost-effective and efficient way as well (Aaron et al. 1999). Electronic commerce transactions are grouped in three basic forms: business-to-business; business-to-consumer and consumer-to-consumer. However, as the expansion of electronic communications progresses, the definition of electronic commerce changes to include more sectors of the economy (Whinston et al, 1997).

Although Government and other organisations also utilise electronic commerce in Australia, this research only looked at organisations that are involved in either business-to-business or business-to-consumer electronic commerce. Business-to-business electronic commerce exists when businesses conduct transactions, share information and maintain customer and partner relationships, encompassing a wide range of inter-company and intra-company activities by means of telecommunication networks (Whinston et al, 1997; Hannon, 1998; Aberdeen group, 1997; Commonwealth of Australia, 1999). While in business-to-business electronic commerce sellers and purchasers are business entities and no individual consumers are involved, business-to-consumer electronic commerce is different. The major feature of business to consumer electronic commerce is that it involves individual consumers purchasing products from sellers, manufacturers or service providers (Commonwealth of Australia, 1999).

It is the purpose of this thesis to identify and describe factors that organisations can capitalise on to create value in the area of electronic commerce.

1.2 *Electronic Commerce Technologies and Software*

The key technologies and software identified from the literature, which will be discussed in detail later in the following chapters, are:

- World Wide Web,
- The Internet,
- An Intranet,
- An Extranet,
- E–Mail,
- Electronic Data Interchange,
- Hyper Text Mark Up Language,
- Hyperlink,
- Search engines,
- Secure Sockets Layer (SSL),
- Secure Electronic Transaction (SET),
- Firewalls.

1.1 Benefits of Electronic Commerce

The uptake of electronic commerce will be influenced by its potential to create business value and by the awareness of its participants of the potential benefits it can offer (Salnoske, 1997). Electronic commerce allows business enterprises to benefit by gaining business efficiency, increasing sales through an expanded customer base, reducing operation costs, increasing return on assets and improving customer service (Weill and Broadbent, 1998; Leland, 2000). Businesses also benefit from electronic commerce by better knowledge management (Fusaro, 1998) and increased automation of business processes (Begley, 1999; Dan et al. 2001).

Some of the benefits of electronic commerce as found in the literature (Nouwens and Bouwman, 1999; Cameron, 1999: Riggins, 1999; Wigard and Benjamin, 1999; Warrington et al., 2000; Hoffman et al., 1999; Kare Silver, 1998) are:

- Improved business efficiency
- Transformation of traditional market chain
- Retained and expanded customer base
- Increased consumer loyalty
- Reduced operation costs
- Improved competitive advantage.

These and other benefits of electronic commerce are described in detail in chapter two of the thesis.

1.2 Challenges of Electronic Commerce

Some electronic commerce challenges identified from the literature (Markey, 1997; Salnoske, 1997; Hodges, 1997; Hannon, 1998; McAndrews,1999; Watson et al. 1999; Hoffman et al., 1999; 1999; Warrington et al. 2000) are:

- Security
- Electronic Payment System
- Web Site issues
- Legal issues
- Customer service
- Technology cost
- Managing change

These and other challenges of electronic commerce are described in detail in chapter two of the thesis.

1.3 Success Factors of Electronic Commerce

Some electronic commerce success factors identified from the literature (Primoff, 1998; Mahadevan, 2000; McAndrews, 1999; Coulston, 1999; Aaron et al., 1999; Segil, 2000; Rutter and Southerton, 2000) are:

- Secure transactions
- Forming alliances
- Partnership with suppliers

- Rapid delivery
- Partnership with technology providers
- More personalised customer service
- Online catalogue
- Effective project leader
- Integrating web site to all business processes, etc.

These and other success factors of electronic commerce are described in detail in chapter two of the thesis.

1.4 Electronic Commerce in Australia

Electronic commerce is a new way of doing business and has significant opportunities. It is fast gathering momentum and becoming a reality in Australia and other parts of the world. The reasons for trading electronically lie in its potential to increase profits, expand the customer base, reduce costs, enable optimal allocation of resources, build customer loyalty and consequently gain competitive advantage (Lane, 1997; Copacino, 1997; Carr, 1997; Aberdeen group, 1997; Nouwens and Bouwman, 1999; Cameron, 1999). Electronic commerce provides opportunities to reduce costs within firms and across supply and distribution chains, with savings associated with inventories, procurements and distribution. It also enables businesses of all sizes to increase profits by reaching customers at greater distances in innovative ways and improves the quality of service to clients through faster response times, etc (Cameron, 1999; Wigard and Benjamin, 1999; Riggins, 1999). The availability of the Internet and other communication technologies has also contributed to its growth.

By 1995 many small and medium sized enterprises in Australia were able to access tenders electronically, utilise electronic catalogues and receive electronic payments (Centre for Electronic Commerce, Monash University, 1999). After extensive research, the same institution advised the Department of Industry, Science and Tourism (1996), that the key elements for the implementation of electronic commerce technologies across industry sectors included: IT infrastructure, standards, legislative and legal issues, universal rules for EC implementations, and availability of EC software (Centre for Electronic Commerce, Monash University, 1999 a).

On the other hand, research that was conducted on awareness within the business and general community of electronic commerce in 1998 revealed that in some regions a significant portion of the community still had a low level of awareness of electronic commerce (Centre for Electronic Commerce, Monash University, 1998).

By 1999 the number of organisations in Australia that were engaged in electronic commerce was increasing, service providers were expanding their offerings and software products and EC technologies were maturing (Centre for Electronic Commerce, Monash University, 1999 b).

According to NOIE (2000), the benefits of electronic commerce in Australia, having in mind particularly small and medium sized enterprises, are realised when electronic commerce is adopted by complete industry sectors and across the economy. These benefits are embodied in higher productivity, business efficiency, transformation of business processes and increased savings.

From the survey conducted among 34 small businesses from a wide range of industries across Australia early in 2001, whose purpose was to demonstrate the business benefits of this new way of doing business, it was revealed that for 62% of participants electronic commerce was viewed primarily as an opportunity to improve efficiency. For the remaining participants it was to achieve higher sales to new as well as existing markets. The same survey has also revealed that the key non-financial benefit was improved customer service, while the most significant hurdle for businesses was finding a good web site developer (NOIE, 2001).

Some of the factors that are contributing to the expansion of electronic commerce in Australia are consumer acceptance of online trading, the emergence of well-known brands of products available on the Internet and increased use of the Internet (Sandilands, 1997). According to the Australian Bureau of Statistics survey of 641,000 businesses on the use of computers and the Internet, including web sites and Internet commerce, a higher proportion of large organisations access the Internet and use it for business purposes than small and medium size ones. According to that survey, 91% of surveyed businesses use the Internet for E-mail, 85% for information search, 44% to access government services, 36% for banking, 18% for ordering

goods and services and 15% for receiving orders for goods and services (Australian Bureau of Statistics, 2000).

The same survey shows that 88% of surveyed companies have company information on their web sites or home pages, 79% advertise their own goods and services, 37% have links to other web sites and 36% obtain customer feedback via their web sites. It also shows that at the end of June 2000 65% of surveyed Australian businesses were classified as Internet commerce active (i.e. receiving sales income from orders for goods or services over the Internet).

According to the same survey, the estimated total value of sales or orders, for the year ending 30 June 2000 was $5.1 billion, and this was dominated by business-to-business transactions.

The area of electronic commerce, as pointed out by the Honourable Richard Alston, the Minister for Communications Information Technology and the Arts in the Commonwealth Government, has generated a high degree of public interest in Australia. This reflects the enthusiasm and willingness of Australians to embrace the opportunities offered by electronic commerce. Australia's general capability in information technology, particularly reflected through world class telecommunication networks and a well-educated and highly skilled workforce, is now opening new avenues for electronic commerce and adding value to business (Commonwealth of Australia, 1998).

1.5 Rationale for Research

According to Kare–Silver (1998) electronic commerce has already made a profound impact on the way business is conducted in developed countries throughout the world. Senn (2000) is of the opinion that the evolution of electronic commerce has further developed solutions that will contribute to the success of this new way of doing business.

Electronic commerce has provided businesses with opportunities to achieve benefits by applying better knowledge management, reducing operation costs, improving

customer service, gaining business efficiencies, and so forth (Fusaro, 1998; Weil and Broadbend, 1998; Leland , 2000).

On the other hand, to be able to achieve the above-mentioned benefits in this growing area of business, its participants have to overcome the many challenges of electronic commerce. These are embodied in security and web site issues, new types of payments, cost of technology; and so forth (Warrington et al, 2000; McAndrews, 1999;Hannon, 1998; La Plante, 1997).

Finally, and very importantly, overcoming the challenges and achieving the benefits of electronic commerce is possible by identifying the factors that are essential contributors to success in this area. The main contributors include secure transactions, forming alliances, rapid delivery and effective project leaders (Mc Andrews, 1999; Mahaveden, 2000; Segil, 2000; Rutter et al, 2000).

The state of electronic commerce in Australia is very well described in a review of electronic commerce in Australia (Andersen Consulting Group, 1999) in which it is suggested that 80% of Australian business leaders believe that electronic commerce will 'revolutionise' the way business will be conducted in the next five years. However, the report also highlights the fact that, when compared to the US, UK, Sweden and Norway, Australian organisations appear to have adopted a 'wait and see' attitude towards the uptake of electronic commerce. This implies that although organisations in Australia are aware of the opportunities associated with electronic commerce, business and organisation leaders are not sure how it will add value to their businesses.

Another study by KPMG on electronic commerce challenges and opportunities in Australia and New Zealand shows that electronic commerce technologies in Australia and New Zealand are below those of the US and Europe. The study also shows that barriers to electronic commerce in both countries are more perceived than real (KPMG, 1999).

Marshal et al (1999) suggest that there is a need for Australian-based research to evaluate early trends and strategies in electronic commerce in Australia. McComb

(1999), on the other hand, believes that large businesses are rapidly expanding their electronic commerce involvement especially in business-to-business e-commerce, which in turns helps in redefining their business efficiency and purchasing patterns.

All the above-mentioned form a good foundation and rationale for undertaking research in this field. Furthermore, Australia, like its international counterparts, is moving to adopt electronic commerce as a business method at an increasing rate. To enable businesses to maximise value from electronic commerce it is imperative to identify, evaluate and disseminate the factors that are critical for success. Therefore, this research identifies the success factors and the challenges, as well as the benefits of electronic commerce to business enterprises trading electronically. This study concentrates on well-established organisations in Australia. Although electronic commerce is adopted by and is relevant to small businesses as well, this research only addresses electronic commerce issues in the top 500 Australian companies. The reason for this lies in anecdotal evidence that suggests that electronic commerce is more prevalent in well-established organisations in Australia.

Although this research addresses well-established business enterprises in Australia, the nature of electronic commerce is such that it is global and should be applicable to organisations over a much wider scope, as well as to small and medium size businesses/organisations. However, if there are any issues that are specifically important for particular types of organisations, these can be addressed in further research.

1.8 The Research Problem

The main objective of this research was to examine and identify how business enterprises in Australia can successfully adopt electronic commerce as a way of doing business. The specific aims of this research were to:

- identify the challenges of electronic commerce that inhibit its successful operation;
- identify and evaluate factors that business enterprises can capitalise on to make "correct" electronic commerce decisions;
- identify the benefits of electronic commerce;

- identify how Australian organisations have anticipated the challenges, success factors and benefits of electronic commerce, as well as which challenges they have actually encountered, which success factors they have actually identified and which benefits they have actually achieved in the electronic commerce field;
- provide organisations with a set of key success factors that will guide and support the development of electronic commerce as a medium of business, so that maximum value from it will be achieved.

1.9 *Methodologies of Study*

In order to accomplish the goals of this research, both qualitative and quantitative methods of analysing the data were applied. The research was accomplished through the four following phases:

- Phase One – Literature Review
- Phase Two - Exploratory Research (Semi-structured Interviews)
- Phase Three – Descriptive Research (Postal Questionnaire)
- Phase Four - Data Analysis

These phases are described in detail in chapter three of the thesis.

1.10 *Overview of the Chapters*

Chapter One

Chapter one provides an overview of the thesis and the questions that are addressed in this research. It summarises the nature of electronic commerce as defined in the literature; electronic commerce technologies; the benefits, challenges and success factors of electronic commerce; and the objectives and methodologies applied. The state of electronic commerce in Australia, a brief comparison with the rest of the world, the rationale for this research to be undertaken, and its contributions are also presented in this chapter.

Chapter Two

Chapter two provides an overview of the relevant electronic commerce literature, covering issues relating to electronic commerce technologies, benefits, challenges and success factors.

Chapter Three

This chapter presents the research methodologies used to accomplish the research. An overview of the methods that were utilised to accomplish this research, including a literature review, semi-structured interviews, a postal questionnaire and data analysis, are presented in this chapter as well. The assumptions and limitations with regard to the applied methodologies, as well as a justification of why the methods used were most appropriate, are also discussed.

Chapter Four

This chapter presents the findings of the seven semi-structured interviews. It also describes the methods used to collect the data. Data from each of the seven interviews are presented under the headings of:

- Company profile
- Company products and services
- Electronic commerce at the company
- Electronic commerce benefits achieved by the company
- Electronic commerce challenges encountered at the company
- Electronic commerce success factors identified at the company
- Future of electronic commerce at the company

This chapter also reports on the analysis of the semi-structured interviews. Data was analysed using content analysis and the issues dealt with include the benefits, challenges and success factors of electronic commerce.

Chapter Five

Chapter five presents the results of a nationwide mail survey of the top 500 Australian companies to confirm the findings from the literature review and interviews. The survey's response rate and data analysis are discussed in this chapter. Data relating to the challenges, success factors and benefits are analysed using the Sign test, the Kruskal-Wallis test and correlation analysis. In order to establish the rank order of the challenges, success factors and benefits of electronic commerce in the entire sample and in the four industries with the highest response rate, the medians of the acquired data are computed.

Chapter six

This chapter discusses and analyses the interview and survey data presented in chapters four and five. The findings of the research clearly indicated that the majority of well-established surveyed companies are encountering most of the challenges identified in the literature review and the semi-structured interviews. The findings also showed that the majority of identified success factors and achieved benefits from the literature and the interviews are identified and achieved by the majority of companies among the surveyed sample as well.

Chapter seven

In chapter seven, the conclusions are presented and the findings, implications and limitations of the research are discussed. This chapter also presents recommendations for future research in this area and concluding comments.

1.11 *Contribution of This Research*

This research identifies and evaluates the factors that business organisations can depend on to add value to their businesses from electronic commerce. It will enable business enterprises to inhibit the problems of electronic commerce and to maximise the potential of the Internet as a medium of trade in Australia. A set of key success factors will enable managers and project leaders of electronic commerce to effectively adopt electronic commerce and maximise its opportunities.

Issues relevant to each success factor are addressed in detail. These will provide guidance and support in addressing the issues of electronic commerce and will contribute positively to increased productivity, reduced costs, improvements in quality, increased flexibility, customer responsiveness and achievement of competitive gains.

Analysis of the challenges, success factors and benefits of electronic commerce will lead to a comprehensive understanding of these issues. The findings of this study are expected to have practical implications for both current and future participants in electronic commerce. They can contribute to electronic commerce success by enabling businesses to properly address the majority of issues in electronic

commerce, generate a positive approach towards such activity and avoid the pitfalls that can cause severe economic consequences.

1.12 *Conclusion*

A summary of definitions of electronic commerce and a brief discussion of electronic commerce benefits, challenges and success factors are presented in this chapter. The state of electronic commerce in Australia and a comparison with the rest of the world, have also been provided. The rationale for this research, research problem, methodologies undertaken to accomplish this study, as well as the contribution of this research have also been provided.

CHAPTER TWO LITERATURE REVIEW

2.1 *Introduction*

Electronic commerce, a dynamic new phenomenon, has become the focus of much attention in the past few years. As a process that uses information technology for commercial transactions over communication networks, electronic commerce has already made a profound impact on conducting business (Lunt, 1999). This trend, according to Kare-Silver (1998) is reaching critical mass and is taking off with remarkable speed in developed countries throughout the world. Furthermore, according to Hamel (1999), among newcomers in most industries that create much new wealth, the presence of companies involved in electronic commerce, such as Amazon.com, America Online, MCI WorldCom, Dell, SAP, etc. is noticeable.

Identifying the enablers of electronic commerce, which help to overcome its inhibitors, in order to take advantage and reap the benefits of this revolution, is one of the major issues for organisations engaged in this field today. Thus, this chapter looks at the success factors, challenges and benefits of electronic commerce identified in the literature and briefly looks at electronic commerce technologies as well.

A restricted definition of electronic commerce encompasses the process of buying and selling goods and services electronically (Commonwealth of Australia, 1999). Electronic commerce also refers to the use of electronic means to conduct commerce with business partners and customers (Whinston et al, 1997). It is also characterised as sharing business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks. Electronic commerce includes placing orders, checking inventory levels or invoice status and payment of bills (Hannon, 1998). It brings about a wide range of activities that enable all inter-company and intra-company functions, including marketing, sales, invoicing, payment, distribution and customer service, over the Internet (Aberdeen Group, 1997, Commonwealth of Australia, 1999).

According to Senn (2000), electronic commerce is evolving in a way that identifies and further develops enablers/solutions of electronic commerce that will contribute to reducing costs, streamlining operations, improving cycle times and creating other

business improvements. One excellent example of an electronic commerce enabler is the web-based electronic catalogue, with its ability to simplify searches, eliminate the need for physical storage and make updating efficient and very effective, drastically reducing the cost of coordination, data gathering and analysis (Baron, et al. 2000).

Another example is the use of distributed work flow technology for integrated value chains in order to manage long-running, process-oriented applications that automate business processes throughout enterprise networks, resulting in the elimination of delays and waste (Yang and Papazoglu, 2000). Finally, the mere fact that an organisation is capable of dealing with, and participating in electronic commerce, besides being known as experienced and pervasive, is for many an indication of its ability to add value, which is recognised and accepted by its customers. (Rhein, 2000).

Business enterprises are able to achieve benefits from electronic commerce by gaining business efficiency, increasing sales through expanding customer bases, reducing operation costs, increasing return on assets and improving customer service (Leland, 2000; Weill and Broadbent, 1998). Companies also gain benefits from electronic commerce by better knowledge management (Fusaro, 1998) and increased automation of business processes (Begley, 1999; Dan et al. 2001).

Achieving benefits in this fast growing area, is however, quite difficult, and business enterprises are faced with many inhibitors and challenges on their way to success in electronic commerce. One of the major inhibitors of electronic commerce is the fear that secure private information such as names, addresses, and credit card numbers might end up in the wrong hands. (Warrington et al, 2000). According to McAndrews (1999), one of the challenges in electronic commerce is the development of new electronic systems of payments which will allay such concerns.

2.2 *Electronic Commerce Technologies*

Technologies that have made electronic commerce feasible and represent its driving force (Aaron, et al., 1999) are major enablers of electronic commerce. These technologies are outlined below:

The Internet

The Internet, a major enabler of technology (Cunningham and Froschl, 1999), is "A worldwide system of computer networks that supports data communication services such as file transfer, electronic mail, Internet relay chat, Internet telephony and the World Wide Web" (O'Brien, 2000, p. 151). The Internet links businesses electronically on a global basis, enabling them to get information quickly and spend less money delivering it (Hannon, 1998). The importance of the Internet is best illustrated by Bill Gates' description, as cited by Kare-Silver (1998), of a tidal wave that "will wash over nearly all industries, drowning those who don't learn to swim in its waves" (Kare-Silver, 1998, p. 10).

The Internet has positively contributed to the expansion of electronic commerce by its ability to extend its scope worldwide, allowing organisations to reach their customers in different parts of the world. Finally, it has the ability to represent text, data, sound, and visual information digitally (National Science Foundation USA, 1998). The Internet application in electronic commerce is based on the fact that information collected through the WWW can be used to customise products, forecast future demand and formulate business strategies (Whinston et al. 1997). Its ability to serve as the sales channel, the product market and the help desk secure the role of the Internet in electronic commerce. It can also serve as the product distribution channel, the planning system and the supply chain decision support system (Aberdeen group, 1997).

Apart from making electronic commerce easier, the Internet revolution has led to a wide dependence on it for information, transaction of goods and services and trade between businesses, business-to-consumer, and government-to-businesses (Hannon, 1998).

Intranet

An Intranet is, according to Cunningham and Froschl (1999, p. 231), "An internal communications and computing system based on the Internet". It is developed within an organisation and enables exchange of information internally. Although it uses the same software, network equipment, and computer language as the Internet, it exists only within an organisation, providing communication between its employees and

sometimes with its customers and vendors. An intranet's use in electronic commerce includes improving communication with employees (weaning people away from a dependency on paper), database information sharing, performance reporting, online training, and becoming a technical resource centre (Hannon, 1998). Other Intranet applications are managing customer relationships and company information for internal dissemination (Aaron et al, 1999), online marketing, logistics and supply chain management and sales management (Kalakota & Whinston, 1997).

Extranet

According to Lawrence et al (1998, p. 285), an extranet is "a collaborative network that uses Internet technology to link businesses with their suppliers, customers or other businesses that share common goal". Basically, connecting two or more Intranets forms an Extranet. This is usually done in order to share information and conduct business transactions in a secured environment (Kosiur, 1997). An extranet is an extension of a company's Intranet to trusted partners, representing a high level of collaboration between them. Because it is an extension of a company's Intranet, an extranet provides additional services to business partners. It reduces errors in intercompany transactions and increases the volume of business with selected partners (Hannon, 1998). An extranet can also be used to manage customer relationships and company information for external dissemination (Aaron et al, 1999).

E–Mail

E-mail, as an "exchange of computer-stored messages by telecommunication" (O'Brien, 2000, p. 149), is electronic correspondence between one or more users on a network, which travels over the Internet. Transmitting messages electronically is an important facility for sending business messages, which may contain text, graphics or sound clips. (Cameron,1999). Today e-mail represents a de facto method of user-to-user communication for businesses, and is the preferred method for many personal communications (Aaron et al, 1999).

Electronic Data Interchange

Electronic Data Interchange (EDI) is a "computer-to-computer exchange of business information" (Lawrence et al, 1998, p. 140). EDI is basically a set of standards, hardware and software, that enables computers in two or more organisations to

transfer their documents electronically. Business documents include orders, inventory statements, bills of lading, certificates of origin, etc. Electronic Data Interchange, also referred to as inter organisational network, has been popular in the transport, manufacturing and retail industries (Hannon, 1998). Electronic Data Interchange in business-to-business transactions has had a particularly important role in electronic commerce. However, the availability of the Internet nowadays is resulting in more business being conducted via the Internet instead of the EDI system (Commonwealth of Australia, 1999).

Hyper Text Mark Up Language

Hyper Text Mark Up Language (HTML) is "the main language or coding system for representing data and graphics materials on the Internet and the World Wide Web" (Cunningham and Froschl, 1999, p. 230). HTML is capable of converting a document created in Word or Excel, for example, into a format that is ready for posting on the server. HTML works with a browser to create text, graphics, sound, and video for use on the World Wide Web. These features of HTML allow participants in electronic commerce to collect all the information about a particular product (including sound, video, etc.) in a convenient location so that they can then make a decision on whether to purchase the product or not (Hannon, 1998).

The World Wide Web

"The World Wide Web, often referred as the Web or the WWW, is a network that connects electronic documents" (Hannon, 1998, p. 6). The Web connects electronic documents using hyperlinks for navigating, publishing and conducting transactions on the Internet and Intranets (Kalakota & Whinston, 1997, and Hannon, 1998). As an important Internet application, the Web is basically a collection of documents (pages) that are located on computers all over the world (Kalakota & Whinston, 1997). Among the other things, the World Wide Web has been "responsible" for providing a common platform for home pages and consequently storefronts (Aaron et al, 1999).

Hyperlinks

Hyperlinks "are elements in an electronic document that allow users to navigate within the document, or to call up a completely different document" (O'Brien, 2000,

p. 150). When a Web visitor selects hyperlink it connects him/her to another Web page that contains related information (Cameron, 1999).

Search Engines

A search engine is "a program that gathers and sorts through information on the Web" (Lawrence et al, 1998, p. 289). Search engine software uses information finders to gather information on the World Wide Web (Kalakota and Winston, 1997). Given the enormous amount of data available on the Internet, without a search engine to assist in finding relevant information, the task would be almost impossible. Even though search engines, because of the size of the Web, cannot portray all the available data, their use is essential for many companies. Among the best-known search engines are Yahoo (www.yahoo.com), Altavista (www.altavista.com), Excite (www.excite.com) and Lycos (www.lycos.com) (Aaron et al., 1999).

The Secure Sockets Layer (SSL)

Because the Web does not itself encrypt the data that are circulating on it, the Secure Sockets Layer has been developed to address this issue. The SSL automatically encrypts the data before transmission and decrypts it after transmission, so that in between it appears as a mixture of numbers to anyone from outside (Kalakota and Whinston, 1997). Thus, the Secure Sockets Layer provides confidentiality and data integrity in communication between a Web server and a browser. It can also be used for transactions other than those on the Web (Kosiur, 1997).

Secure Electronic Transaction (SET)

Secure Electronic Transaction is a protocol for encrypted credit card payments over the Web. SET is a single technical standard for protection of payment made by credit card on the Internet. VISA and MasterCard established it in 1996 with the major objectives of providing authentication of the cardholder and merchant and confidentiality of payment data (Kalakota and Whinston, 1997; Siebel and House, 1999). SET was developed for handling credit-card transactions over the Internet and for use by other applications, such as Web browsers (Kosiur, 1997).

Firewalls

According to Lawrence et al (1998, p. 285), a firewall "refers to both software and hardware that stands between the Internet and a corporate network for security access control". It allows only designated external users to access protected network programs. They basically build a barrier between the corporate network and the external Internet (Kalakota and Whinston, 1997). Firewalls provide access control based on the content of the packets of data that are transmitted between two networks, and can also provide protection against attacks on individual protocols and applications (Kosiur, 1997)

2.3 *Electronic Commerce Benefits*

According to Business Solutions Centre Intel (1998), at the time when electronic trade emerged it was only used to deliver products and promotional messages. After that period the focus moved to the stage when participants in electronic commerce could perform many more online operations and achieve more benefits.

Roel (1997) is of the opinion that in the transition from industrial to information age electronic commerce offers considerable benefits for new players who are ready to take advantage of it. The uptake of electronic commerce, according to Salnoske (1997), will increase if business enterprises are aware of its benefits. Therefore, in order to be successful, the main task for the people who are involved in electronic commerce is to persuade potential participants of its benefits.

Electronic commerce, according to Aaron et al. (1999) and Nagendra (2000), fosters the exchange of business transactions in a more cost-effective and efficient way. It is about building better relationships between its participants including producers, suppliers and customers. Electronic commerce allows consumers to search for products and check for customer service information online. It also allows businesses to increase market share by giving customers the opportunity to shop at a time and location convenient to them (Hannon, 1998).

Finally, among the main reasons for many companies, regardless of size, to participate in any business is to be successful and to achieve benefits from it. Electronic commerce is not any different in that respect. The benefits of electronic

commerce identified from the literature are classified into two main categories - tangible and intangible.

2.3.1 Tangible benefits

Business Efficiency

Three ways in which electronic commerce significantly influences business efficiency are more efficient communications with trading partners, improvements in the distribution and transport of goods, and efficiencies in processing payments and improvements to cash flow (Commonwealth of Australia, 1998; Rosen and Howard, 2000). Electronic commerce also enables optimal allocation of resources and allows business enterprises to enter new markets, by providing them with a wide scope without physically establishing offices or using other forms of localised advertising (Nouwens and Bouwman, 1999; Cameron, 1999). Furthermore, electronic commerce being conducted over the Internet "offers absolute gains in efficiency to every market" (Friesen, 2001, p. 16.). Riggins (1999) and Griffin (2000), believe that online bill presentment and payment and online shopping are just a few examples of how the Internet can be used to improve efficiency. Leland (1999) argues that being engaged in any model of electronic commerce brings a promise of efficiency, by dramatically reducing costly and time-consuming inefficiencies.

Increased Automation of processes

According to Begley (1999, p. 46) "Market growth and changing customer demands require the automation of processes and integration of systems to survive". Furthermore, "Increased automation of business processes within a business organization leads naturally to automation of business-to-business interactions" (Dan et al, 2001, p. 72).

Transformation of Traditional Market Chain

Wigard and Benjamin (1999), suggest that electronic commerce has the capability to transform the traditional market chain (Producer-Wholesaler-Retailer-Consumer), into a Producer -Consumer chain, bypassing two very costly parts of the traditional chain, wholesalers and retailers. It is envisaged that these potential benefits of lower coordination and distribution costs due to electronic commerce will be passed on to consumers as well as resulting in reduced costs for businesses.

Retained and Expanded Customer Base

As suggested by Carr (1997), electronic trade enables the expansion of the customer base without increased cost, and allows companies to better meet consumer needs. With regard to business needs, trading via the Web allows businesses to build customised online markets for multiple customers, which is important for companies that are offering their products or service through this new channel. Electronic commerce also allows the expansion of marketplaces, not only nationally but internationally as well (Turban, et al, 2000).

Reduced Operation Costs

Electronic trade, underpinned by the intuitive and graphical nature of the Web technology, provides businesses with significantly reduced operation costs. Colourful Web sites are less expensive than printing and distributing a four-colour advertising brochure, for example (Cameron, 1999). There are many cost-effective benefits of electronic commerce that business enterprises can take advantage of. They are achievable through reducing already existing overheads (Drechsel, 1997), higher inventory turnover, better resource planning, reduced material expenses, increased revenue, reduced administrative costs, reduced logistic operating costs, time-efficient sales, and improved return on capital (Aberdeen group, 1997; Kent and Lee, 1999; Grover and Ramanlal, 2000; Abell et al. 1996). Furthermore, according to Nickson (2000, p. 67.) e-business reduces cost and "hardening competition ensures that these benefits are passed on to consumers".

Kare-Silver (1998), is of the opinion that in some cases, businesses that use electronic commerce extensively provide their customers with cost savings of more than 15 per cent, simply by taking away the administrative burden currently imposed on buyers, and taking advantage of a company's existing database. This is also applicable to banking, where low cost and bigger markets are drivers for embracing electronic business by banks as well (Stewert, 1998). The Internet is capable of boosting revenues by extracting the company's reach to global markets, reducing costs by overriding traditional distribution channels and improving customer service with better information in a multimedia form (Connolly et al., 1998). According to Picot et al. (1997), as quoted by Fergusson (1999), operating costs can be significantly reduced by the application of information and communication technology. For

example, the cost of the click of the mouse button is considerably less than that of a physical search.

Acquisition of a Niche Market

Electronic commerce, because of its nature, allows companies to become niche players. A good example of this is HotHotHot (http;//www.hothothot.com), the 'Net's original hot sauce shop'. "By establishing itself as a niche player in the online marketplace, HotHotHot! has moved from being a small store with limited clientele to a well-known supplier of hot sauce worldwide. " (Riggins, 1999, p. 304).

2.3.2 Intangible Benefits

Enhancing well-being and education of customers

Electronic commerce can enhance customers' well-being and quality and convenience of life, through greater learning opportunities and social interaction. Additionally, consumers can attain yet another important intangible benefit, which is educating them as they use technology for electronic commerce (Whinston et al. 1997).

Consumer Loyalty

According to Wigard and Benjamin (1999), electronic commerce, due to efficiencies gained from the Information Superhighway (the Internet), allows customers to select a wide variety of low-priced goods at distant locations. It enables businesses to build relationships with customers by offering goods and services at lower costs and convenient shopping, which nurtures consumer loyalty (Adam and Deans, 2000; Business Solution Centre Intel, 1998).

According to Warrington et al. (2000), the physical separation of buyer, seller and merchandise, and the overall environment of perceived insecurity on the Internet, is by itself an inhibitor of electronic commerce. However, it is also a unique opportunity for Internet sellers to develop a trustworthy relationship with buyers in order to make the initial sale, thus fostering customer loyalty.

Hoffman et al. (1999), realise that, in order to create benefits, the consumer's desire to control the use of their personal information, has to coexist with companies' need

for the consumer's trust and loyalty. Coulson (1999), argues that companies seeking to exploit the full benefits of electronic commerce through the use of efficient electronic commerce strategies, must likewise underscore the need for facilitating the access of customers to brand products and service to generate a high degree of loyalty from them.

Competitive Advantage

According to Kalakota et al. (1999) the competitive advantage a company offers to its customers, together with the fulfilment and ability to utilise the information they get from the company ultimately determines the company's competitive advantage. Electronic commerce, being suitable for business enterprises of all sizes, allows businesses to position themselves ahead of their competitors (Cameron, 1999). Today's visionary companies are using IT–based innovations in trading and the Internet to allow customers, suppliers and vendors to become an intrinsic and valuable part of their business networks.

Electronic commerce can also create competitive advantage by providing goods at a lower cost than others or by differentiation, which can be considered as doing business in a unique way relative to competitors. Doing business in a unique way was described as a way of gaining competitive advantage by Porter and Millar (1985) and Porter (1986). Competitive advantage can also be gained by making "hard to find" goods available to consumers, or by electronically identifying customers' needs and eliminating retailing constraints and marketing costs by contacting customers directly (Hoffman et al. 1999).

According to Straub (2000, p. 48) "By getting involved in a global marketplace, a business embraces the fast-paced world of the Internet and has a distinct competitive advantage over those companies expending resources the 'old-fashioned' way". Finally, with equipment getting cheaper and with widespread opportunities to acquire competitive advantage, electronic commerce is fast becoming very popular (Kare-Silver, 1998).

Convenient Shopping

Electronic commerce customers buying from the Internet are able to search for products and information in places that are more convenient than shops and supermarkets (Hannon, 1998). Electronic commerce allows everyday transactions to be made electronically; customers can shop in London or New York, for example, without leaving home (Commonwealth of Australia, 1998; Quinton, 1999). Furthermore, since Web sites, unlike salespeople, are always online, customers can find the answers to any question any time (day or night) they want (Cameron, 1999). One of the possible explanations of the success of electronic trade lies in the fact that "people will relish the convenience of buying things on the net, flocking to stores whose electronic doors are always open and where parking is never a problem" (Winner, 1997, p. 31).

2.4 *Electronic Commerce Challenges*

To position them to be successful and benefit from electronic commerce, it is important for businesses to overcome its inhibitors and challenges. Unfortunately, "one of the common errors that corporations make is to underestimate the realities of challenges facing Internet commerce deployment" (Mougayar, 1998, p.51). According to Corbitt (2000, p. 32) "The majority of organizations recognize that it is not sufficient just to have an e-commerce department, but that it is necessary to revise the whole of the organization's structure, strategy and logistical operations if the organization is to respond successfully to the challenges and opportunities offered by e-commerce".

Furthermore, Oliva (2000, p. 56) believes that "Firms in business and industrial markets increasingly recognize that taking charge of their own channel disruptions and transformations is an imperative. They cannot just 'let things happen' and assume they are immune from e-business challenges. Even if their products or services have little connection to the digital world today, the digital content of everything increases as we move toward a digital/networked economy".

Electronic commerce challenges identified from the literature are classified into four categories - technological, managerial, business and other.

2.4.1 Technological challenges

Security

Security issues are very important in every business, but the degree of importance of these issues in electronic commerce is set at the highest level (Kalakota and Whinston, 1996). According to Koved et al. (2001, p130) "Successful companies recognise that their security infrastructures need to address the e-business challenge". Gray (1999, p. 24) asserts that "whether you are selling to the world over the internet or doing business in a finite universe via intranets, once you've ensured the availability and dependability of your systems, you have to insure their security". The basic question is how to provide common trust in the area of privacy that can help the development and growth of this potentially lucrative business.

This particular issue touches two sensitive areas - how to make the parties involved trust each other, and how to develop an infrastructure that makes electronic commerce successful. Since the success in the latter eventually leads to success in the former, the main focus of the leaders in technology in the last few years has been on creating acceptable security measures (Markey, 1997; Salnoske, 1997; Rankin and Sharp, 2000).

One of the main fears regarding security in electronic commerce is that information given in online transactions will not remain private. The so-called depersonalised relationship between the seller and buyer, especially when it comes to the point when the buyer has to disclose some personal information such as acredit card number, is of concern as well (Hodges, 1997; Czerniawska and Potter, 1998; Alexander, 1998; Warrington et al. 2000). However, despite all those concerns, without some private information, it is almost impossible for businesses to make sales or determine important facts about their customers such as demographical information (Engler, 1997).

Vartanian (1997), identifies the following security issues in electronic commerce as of the utmost importance:

Personal security. Privacy, confidentiality and their protection are the main issues that customers expect when they decide to do business with someone who offers goods or services electronically;

Systemic security. The emphasis here is on protection of the electronic data when it moves to and from financial institutions. Thus, security of financial data and payments is very important;

Product security. Any new electronic product such as information must be safe and totally secure;

Indirect security. There must exist an awareness that the security of the particular system is affected by the entire network and other systems it connects and communicates with.

Web Site Issues

The quality of the web site is still a challenge for companies involved in electronic commerce (Watson et al. 1999; Kalakota and Whinston. 1996). According to Morgan's research in Australia, as cited by Lane (1997), making Web sites as user-friendly as possible is a challenge that could greatly influence the success of electronic commerce. Conventionally, special attention has to be paid to the user-friendliness of Web sites, because it is an important factor that contributes to the creation of business value. Designing and implementing a business Web site is a process that combines the business's goals and objectives with the needs of Web site visitors. Taking into account both elements ensures that the design does what the company wants the site to do and that the visitors get what they want. Thus the main challenge for Web site designers is to balance the latest methods and techniques with speed and functionality (Hannon, 1998).

Technology Cost

Electronic commerce offers endless possibilities for success and, with new technology coming out almost every day, it can almost be regarded as a haven for doing business. However, the flip side of the coin is the cost of that new technology (Ba et al. 1999). For many companies it is just too high. Many of them, for example, are realising that one of the biggest costs of electronic commerce is integrating the Internet (or Intranet, or Extranet, for that matter) into the rest of their practices, as just one of many technological inventions available. If a company decides to integrate the Internet into the rest of its practices, its web server products need to be more complex and the cost associated with that might range from tens of thousands of dollars to

million of dollars. If they, decide however, not to do it and deal with all the staff personally, they will lose many of the benefits. (LaPlante, 1997).

Other technological challenges

Hoffman et al. (1999) and Abeyesekera et al. (1999) have highlighted other technological inhibitors and challenges of electronic commerce, including possible drawbacks associated with software installation, measuring success, lack of electronic commerce infrastructure, and finding a good service provider.

2.4.2 Managerial Challenges

People and Organisational issues

People issues (how to motivate and train employees), business process reengineering, changes in organisational structure of the company and obtaining senior management support for electronic commerce are some other possible challenges (Hoffman et al. 1999).

Obtaining senior management backing

The challenge of getting the senior managers' support is, according to Poje (1998), very often caused by three major reasons. The first is the fact that senior managers are not always aware of the benefits of electronic commerce. The second reason is that electronic commerce ideas are often justified on the basis of anticipated cost cutting in the short term, and when these do not materialise support is withdrawn from the idea. The third reason lies in paranoia over security matters.

2.4.3 Business Challenges

Customer Service

In the field of electronic commerce, special attention should be paid to customer service because it represents an enormous chance to create new business opportunities. Customer service is regarded as good when, for example, it allows customers to check on the status of their orders or account after business hours, which is one of the real possibilities in this area. Electronic commerce enables and even encourages businesses to extend their quality customer service beyond customers' expectations by creating an online catalogue (Primoff, 1998). Furthermore, specialised customer service can be provided through special customer advocacy

groups that provide quality information by establishing quality standards or certifications. These groups set minimum quality standards for compatibility and interoperability, which indicate the acceptability of a product (Whinston et al. 1997). Finally, Alter (1999, p. 1) emphasises the importance of customer service by saying that, "E-commerce hype and concerns about web site aesthetics often seem to overshadow the reality that distributors engaging in e-commerce need to fulfil customer orders through competent purchasing, warehousing, and logistic operations".

Customers' old habits

From the customers' point of view, however, the challenge could lie in the fact that some of them are not ready to give up the traditional way of shopping which includes more contact with store employees, sense of security, etc. (Hoffman et al. 1999), or in other words customers "want someone answering questions face to face" (Schwartz, 1999, p. 127).

2.4.4 Other Challenges

Legal Issues

According to Hoffman et al. (1999) and Whinston et al. (1997) electronic commerce, being in its early stages, attracts many challenges especially those relating to legislative issues. Until comprehensive legislation concerning electronic commerce is in place, people will be reluctant to exploit its opportunities. Essentially the legal challenge is to find the best legislative solution. Currently there are two approaches to that issue. One is in favour of so-called self-regulatory regimes for protection of privacy, and the other is in favour of governmental legislative responsibility in that area.

Lawrence et al (1998) suggest that " a major hurdle is to provide security for Internet communications in order to prevent fraud. Encryption technologies are being developed to facilitate monetary transfers and ensure that messages are not corrupted accidentally or deliberately by third parties. Hand in hand with the question of security is the question of protecting the privacy of the Internet user, who leaves a 'trail' that can be followed and recorded every time he or she uses the Internet".

Finally, even though electronic commerce is a "land of opportunity", it is only so if all the above-mentioned inhibitors and challenges are understood properly. Electronic commerce can produce income as well as liability for all participants, and that is why serious attention has to be paid to all of these issues (Vartanian, 1997).

2.5 *Electronic Commerce Success Factors*

Electronic commerce success factors, in this thesis, are defined as the essential factors that contribute to the further development of electronic commerce. According to Laudon and Laudon (1988; 1998), as cited by Hossain (1999, p.3), "success factors are small numbers of easily identifiable operational goals shaped by the industry, the firm, the manager, and the environment that assure the success of an organization" and allow it to remain competitive.

Rockart (1979), as cited by Zahedi (1987, p.3), defines critical success factors in the area of Information Systems as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where things must go right for the business to flourish". Zahedi (1987, p. 14) argues further that "critical success factors may have double significance. That is, if these factors are crucial for the success of the system, then their failure would lead to the failure of the information system".

Seddon (1997) is of the opinion that the critical factor in IS success is not determined by the use of the system but rather by the benefits that should flow from using the system. The same author then goes further to explain, "A successful system will provide benefits such as helping the user to do more or better work in the same time, or take less time to achieve as much work of the same quality as was done in the past" (Seddon, 1997, p. 3). From the manager's point of view, however, the critical success factors represent the key areas of activity "in which favourable results are absolutely necessary for a particular manager to reach his or her goals" (Rockart 1982, p. 2).

According to Boynton and Zmud (1984, p. 2) "Critical success factors are those few things that must go well to ensure success for a manager or an organization, and, therefore, they represent those managerial or enterprise areas that must be given special and continual attention to bring about high performance. CSF include issues

vital to an organisation's current operating activities and to its future success". The same authors further argue that critical success factors do not demand an inflexible format in their use or exposition, and this allows them to be adapted to different applications in MIS and other organisational areas. Finally, according to the same authors, critical success factors actually "represent a high order entity at which an intensive analysis of important issues can be focused" (Boynton and Zmud, 1984, p. 9).

To enable businesses to maximise value from electronic commerce it is imperative to identify, evaluate and disseminate the factors that are critical for the success in this new and fast-growing area of business. Electronic commerce success factors identified from the literature are also divided into four sections - technological, managerial, business and other.

2.5.1 Technological success factors

Secure Transactions

Secure transactions significantly influence the willingness of potential buyers to shop online, and as an enabler of electronic commerce are one of the corner stones of this field (Liao and Tow, 2001). Since large numbers of online users are very reluctant to provide private information such as credit card numbers over the web, their concern has to be allayed by putting adequate mechanisms in place and assuring them that the web transactions are secure (Primoff, 1998). Many companies, in order to assure their customers of secure online transactions, are offering an implicit or explicit guarantee of security (Mahadevan, 2000). This guarantee can be in the form of evidence of the company's online safety record, as Amazon.com is doing, or the so-called "Online Secure Shopping Guarantee" that is provided by Dell Computer to its customers (Warrrington et al., 2000).

McAndrews (1999) suggests that consumers should also be informed of the system procedures to resolve problems in the case of operational problems, detection of fraud, or use of counterfeits. These measures help reduce uncertainties that might otherwise prevent widespread acceptance of electronic commerce.

Providing Online Decision Support

One of the most promising types of content on a web site is an online decision support system, which improves the user's information-gathering effectiveness by allowing the user to submit specific decision parameters and subsequently receive a suggested course of action. Such an online decision support system also helps advertising managers put together entire advertising campaigns by indicating what type of advertisements would work well on which stations, at what times and in what format (Riggins, 1999).

Online Catalogue

Many companies embrace online catalogues as enablers of electronic commerce, because they are generally seen as an intelligent way to provide multiple buyers with new approaches for purchases from a large variety of suppliers (Aaron et al., 1999). They have the ability to simplify searches, making location and evaluation of goods easy and allowing customers to interact with the supplier's information effectively (Baron, et al. 2000).

Payment by Credit Card

Panurach (1996), reports that the extraordinary growth of interconnected computer networks and the pervasive trend in commerce of using these networks as a new field for business operations is stimulating demand for new payment methods. This has paved the way for payments to be made using credit cards over communication systems such as the Internet (McAndrews, 1999). Treese and Stewart (1998, p. 284) suggest that "credit cards have become the most common means for consumers to pay for goods and services on the Internet", and according to Maxwell et al. (1999), electronic commerce has been greatly facilitated in the United States by the use of credit cards for payments on the Internet.

Electronic Payment System

Whinston et al. (1997) and Stewert (1998) argue that the full potential of electronic commerce can be achieved only when it offers a simple, inexpensive and secure way to make payments over the Internet. However, not many electronic payments are currently conducted over the Internet, which, to a certain degree, impedes the success of electronic commerce. McAndrews (1999), is of the opinion that the rapid

development of new electronic systems of payment, or e-money, offers society many potential benefits although it poses new types of risk for system operators.

Electronic payments can be broadly grouped into two categories: those, such as electronic cheques, that involve transmitting instructions to banks to transfer funds from one deposit account to another; and those, such as some forms of stored-value cards and digital cash, that represent the electronic equivalent of bank notes. However, According to Schneider and Perry, (2001, p. 239) "implementation of electronic commerce payment systems is in its infancy and still evolving".

Frequently-asked Questions

Many corporate Web sites include frequently asked questions that provide users with additional information without the need to directly contact a customer service representative. In order to make their electronic commerce more successful, the online storefronts of banks are open 24 hours a day, and many sites provide telephone contact points or e-mail links for specific individuals. Finally, having a link that generates a telephone call from a designated customer to a service representative also supports electronic commerce success by enhancing customer loyalty. (Riggins, 1999).

Integrating Web Site to All Business Processes

According to Ruud and Deutz (1999, p. 32.), to be successful "Your Web site must interact seamlessly with all aspects of your business, including writing and reading information to and from your customer database, inventory, and accounting applications". To complete a transaction once an order is placed, an accounting entry to record the sale must be made. To make business more efficient and effective, McClure (1998), believes that integrating web site sales with the company's accounting software is necessary. To address this concern, some accounting software vendors are developing e-commerce systems that tie into management systems. Among the best-known software packages that allow integration of a company's web site into all its business processes are Microsoft's Site Server for Commerce, IBM HomePage creator for e-business, Netscape's CommerceXert and Pandesic Web Business (Zarowin, 1999).

Online Personalised Recommendations

By collecting information about the user, organisations are now in the position to target customers more effectively. Some Web applications improve the user's information-gathering effectiveness, allowing organisations to essentially establish a one-to-one marketing relationship. Many organisations allow their customers to build personal profiles of their interests and individual characteristics, which allows companies to make personalised recommendations of new goods to their customers (Riggins, 1999).

Functional web site

According to Studt (2000) a list of possible improvements in electronic commerce includes ensuring that a site is functional and at least minimally attractive. Constant update of the content of the web site, its functionality, the quality of its design and the information, along with redesigning business processes to take advantage of new technology, are all critical to the web site's success (Riggins, 1999; Liu and Arnett, 2000). An excellent example of that sort of functionality has been achieved by Federal Express who have revolutionised the package delivery industry by allowing users to track any package online using an air bill tracking number Riggins (1999).

2.5.2 Managerial success factors

Effective Project Leadership

In the area of Information Systems, the leadership role is one of the major issues as well. Because of their roles in companies leaders are, according to Lucas (1981), in a position to effect the allocation of resources, initiate prioritising processes and create a more favourable environment for IS, etc. Others, in addition, argue that leaders are in a good position to influence other partners in the business, and are more likely to succeed in overcoming resistance toward IS (Keen, 1981; Markus, 1983). The role of a leader in small organisations is even more important, where a supportive CEO, for example, is very likely to contemplate favourably the perspective of IS (Jarvenpaa, et al 1991). Finally, the leadership role at company's meetings is best fulfilled by expressing the leaders' views with regard to information and business requirements, clarifying issues related to projects, recommendations, participating in decision making and monitoring the project (Thong, et al, 1996).

In the electronic commerce environment, where changes occur very frequently, effective project leadership is the factor that delivers sustainable value to the company. Follit (2000) describes what a critical enabler an effective project leader is; "If you don't have a strong leader who owns the e-transformation at your company you need to recruit one". An effective project leader is someone whose energy, passion and vision is capable of leading electronic commerce to success.

Forming Alliances

According to Segil (2000) forming alliances has become a crucial factor in the battle to gain success in electronic commerce. In a complex environment such as electronic commerce, forming alliances allows companies to develop and deliver products and services quickly, expand their markets and at the same time share the risk and lower the cost. Developing strategic alliances with, for example, the traffic control sites is becoming critical for generating first-time visits, as the number of Web pages doubles every year. These alliances will allow an organisation's Web link to be prominently displayed within improved bookmark facilities and a potential customer's personalised link page (Riggins, 1999). Finally, Leland (2000) concludes that companies which are faced with more and more competition will be better off even if they enter informal and experimental alliances.

Partnership With Suppliers

Partnerships with suppliers, because of their ability to influence customer loyalty, customer base, efficiency, etc., are an important enabler of electronic commerce. This is nothing new in the world of business because, according to Glenn Reyer, vice president of global marketing for Womex, as cited by LaPlante (1997), some things in business hardly ever change. One of them is the need for reliable and cheap suppliers. Electronic commerce is no exception to that rule.

Partnership With Technology Providers

Coulston (1999) suggests that partnerships with technology providers are another critical enabler of electronic commerce. They are critical because technology itself is becoming more and more advanced every day and companies have to keep pace with it. This relationship shows itself most clearly as an enabler when the company decides

it needs a technology that can generate the technological bandwidth and transform a web site into a powerful electronic commerce medium.

Appropriate organisational structure

According to Venkerman and Henderson (1998), Grenier and Mates (1995), and Tapscot, et al. (1998) as deduced by Tetteh and Burn (1999, p. 2), "in order to benefit from the new electronic mediated markets, firms must adopt appropriate organisational forms based on the virtual organising perspective". El Sawy et al (1999) are of the opinion that in order to be successful businesses have to have an appropriate organisational structure, which hopefully will encourage collaboration, partnering and transformation of reward systems as well.

2.5.3 Business success factors

Rapid Delivery

Because the delivery of goods may present e-tailers with a range of problems, rapid or on-time delivery to online customers is an enabler of electronic commerce. If supermarkets are to succeed in this new area, they need to be able to deliver ordered items in 24 hours, otherwise their customers may prefer to travel to their local stores for immediate service. The issue of rapid delivery applies to all products in today's instant world, although consumers may be prepared to wait a bit longer for the delivery of purchases such as white goods and computers. However, in some cases like food, successful rapid delivery has to be combined with cold storage (Rutter and Southerton, 2000; Castelluccio, 2000).

Disintermediation

The advent of electronic commerce has provided its participants with a real opportunity to bypass many of the existing intermediaries. Electronic commerce is, according to Promoff (1998), very effectively positioned to eliminate middlemen. In order to be more successful, many companies are going through this process of 'disintermediation', which can be broadly defined as the elimination of agents, or intermediaries, in business transactions. One of the better examples of this is Amazon.com, which has shown that disintermediation of the supply chain can be a key success factor in creating new value for the company (Mahadevan, 2000). The exponential growth of electronic commerce coincides with the increasing

fragmentation of the supply chain. It occurs when retailers, for example, add web sites as their new sales channel for reaching customers. Disintermediation, however, results in much greater supply-chain complexity (Parker, 2000).

According to Riggins (1999), a trend towards disintermediation can be observed in other industries as well. Manufacturers, for example, are using their web sites to sell their products directly to the end consumer. However, this is more successful in industries in which players have a strong brand image and a significant market share in the physical retail space. Dell Computers and Gateway 2000 have demonstrated the success of selling directly to end consumers using their Web sites, thus bypassing the traditional intermediaries. In some industries, however, the Internet has created opportunities for new intermediaries to emerge that improve the efficiency of the buyer / seller relationship.

More Personalised Customer Service

A very important enabler that generates many benefits in electronic commerce is the ability of product and service providers to deal more personally with their customers in Internet business transactions. It is possible to achieve more personalised customer service through direct customisation of a customer's requirements on line (Piturro, 1999, Mahadevan, 2000). Furthermore, an example of good customer service is when the organisation takes into account the voice of its customers (El Sawy, 1999). In order to provide better customer service, many firms nowadays link their Internet site to internal databases, thus allowing customers to check their accounts, purchase histories, etc. They can also track shipments and the position of their order in a supplier's production schedule, update billing and shipment addresses, and obtain technical support information without speaking to suppliers (Commonwealth of Australia, 1999; Baker, 1999).

Market responsiveness

Flexibility represents a success factor because within each market structure there will always be variations in activities that an organisation should be aware of and be ready to align itself with (Mahadevan, 2000).

Advertising in newspapers, magazines, and so forth

The most effective ways of reaching customers in the area of electronic commerce, according to Zarowin (1999), include advertising in newspapers, magazines and company literature, as well as making sure that the company is listed on leading search engines.

Advertising online

According to Minoli and Minoli (1997, p. 447) "With several dozen million people connected worldwide, the Internet has become an excellent medium for advertising an organization's products and services". Advertising online is a success factor in electronic commerce also because it is one of the streams that can create revenue in online business and because of its ability to channel customers into the company's web sites (Mahadevan, 2000).

2.5.4 Other Success Factors

Adequate resources

Adequate resources are a critical success factor. In order to be successful a company needs to have adequate resources. Furthermore, the company's resources should be based on a careful analysis of how the company will spend money (Dugan, 1999).

Being visionary

According to Daniels (1994), as cited by Hossain (1999), if an electronic commerce strategy is to be successful, it should have a vision. An electronic commerce manager should think strategically and recognise that managing and investing electronic commerce projects requires a newer, more visionary management style.

2.5.5 Electronic Commerce and The Wider Context

The process of enabling businesses to maximise value from electronic commerce is best explained by following the adoption/diffusion theory. According to Enos and Park (1988, p. 26), adoption is the acquisition of the "body of knowledge necessary to fulfil a specific task". Diffusion, on the other hand, according to Mansfield, as cited by Davis (1979), refers to the spread of new processes within the company as well as from company to company.

A study on adoption and diffusion in earlier forms of electronic commerce (Iacovou, et al, 1996, p.2) shows that, for example, "Electronic Data Interchange can only be of full benefit to systems initiators and adopters through widespread adoption of the technology". The same authors were of the opinion that the major impediment to the diffusion of new technology was motivating other companies to adopt that technology. Furthermore, "as information about the apparent benefits becomes more widespread, the rate of diffusion accelerates" (Richardson, et al. 1991, p.11).

The challenges of adoption and diffusion of new technologies exist in other fields as well. In manufacturing, for example, these challenges are embodied in the lack of top management support (Guarino and Wilemon, 1990), and employee resistance towards new technologies (Winfield, 1991). On the other hand, the successful adoption and diffusion of new technologies is underpinned by several success factors in the health industry. These include the innovation's compatibility with the existing technology, low level of complexity of the technology, etc. (Richardson, et al. 1991) According to Iacovou, et al (1996), the benefits of adoption and diffusion of new technology include operational savings, efficiency of the organisation and tactical and competitive advantage.

In the light of the above discussion, the major task before Australian companies who seek to succeed in electronic commerce is to acquire the necessary knowledge, as well as to spread it within the company and across the industry. In order to make this task as uncomplicated and as smooth as possible, this research sets out to identify, evaluate and disseminate the factors that are critical for their success in this new area of business.

2.6 *Prior Research With Emphasis on the Challenges, Success Factors and Benefits of Electronic Commerce*

According to Foley (1999), many well-known companies in the world have established electronic commerce strategy groups or research centres, and some of them such as BT, Hewlett Packard, IBM, Ernst and Young, and KPMG, are ready to share their research. Unfortunately, in most cases the only information they are ready to share is related to the promotion of their services or consultancies. Somewhat more

open are the so-called collaborative groups, which examine electronic commerce issues from a multidisciplinary perspective. One of these groups is Collecter, a joint venture by 22 universities around the world, with a strong emphasis on Australia (www.collecter.org).

The literature review in this thesis has outlined a number of the challenges, benefits and success factors of electronic commerce, from different sources. This section highlights prior research of significance to this study.

- ***The Challenges of Electronic Commerce***

Lowry et al. (1999) conducted research in 10 companies involved in electronic commerce in Australia and identified a number of challenges for electronic commerce. The major challenges identified included integrating the electronic business into existing business, letting people know that the company does business online, accepting the Internet as a marketing/business medium and overcoming security concerns. According to the research conducted by the Centre for Electronic Commerce, Monash University (1999), key challenges include IT infrastructure, standards and legal issues.

- ***The Success Factors of Electronic Commerce***

Wolfinbarger and Gilly (2001) argue that too many web sites do not pay sufficient attention to the user-friendliness of the web site, or to the completion of transactions. Their final findings also indicate that customer loyalty is likely to increase when a customer service representative is available online. A survey of 136 purchasing professionals by Giunipero et al. (2000) showed that changes in purchasing function affect the ideal skill set required for a world-class purchasing professional. The results of this research can be of use to develop the basic skill model, and can also contribute to the competitive position of the firm. The key skills were found to be: strategy, process management, teaming and decision-making.

A study of electronic commerce in Australia and New Zealand undertaken by KPMG (1999), indicated that some critical success factors in both countries

included complementing the electronic commerce strategy with the corporate strategy; choosing partners and skills carefully and integrating across the whole organisation for larger efficiency gains. The major successes identified by Lowry et al, (1999) among Australian companies include building strategic alliances with customers and allowing Internet customers to purchase advertised goods before others.

- ***The Benefits of Electronic Commerce***

Wolfinbarger's and Gilly's (2001) research into consumers' perceptions of electronic commerce issues showed that searching on the web can bring about significant benefits by dramatically reducing costs and irrelevant information. It also indicated that online stores are perceived as potential sources of inventory when offline stores are out of stock. The major benefits of electronic commerce, according to the results of a survey conducted in Australia in 1999 (Lowry et al), included expanding existing markets, reaching customers at greater distances, developing better relationships with customers and educating potential clients.

According to research on electronic data interchange adoption and the impact of technology in small organisations conducted by Iacovou et al (1996), the benefits of early forms of electronic commerce can be grouped into two categories. The first group, so called direct benefits, includes mostly operational savings related to the efficiencies. The second group, so called indirect benefits, includes tactical and competitive advantage.

2.7 *Conclusion*

A summary of the major findings from the literature review on electronic commerce benefits, challenges and success factors is presented in Table 2.1.

Table 2.1 Benefits, Challenges and Success Factors of Electronic Commerce Identified From the Literature

Benefits	***Literature***
Business efficiency	Rosen and Howard, 2000; Commonwealth of Australia, 1998; Nouwens and Bouwman, 1999; Cameron, 1999; Freisen, 2001; Riggins, 1999; Griffin, 2000; Leland, 1999, Iacovou et al. 1996, NOIE, 2000.
Increased automation of processes	Begley, 1999; Dan et al, 2001.
Transformation of traditional market chain	Wigard and Benjamin, 1999.
Retained and expanded customer base	Carr, 1997; Turban et al, 2000.
Reduced operation costs	Cameron, 1999; Drechel, 1997; Aberdeen Group, 1997; Kent and Lee, 1999; Grover and Ramanlal, 2000; Nickson, 2000; Aaron et al, 1999; Nagendra, 2000; Kare-Silver, 1998; Stewert, 1998; Picot et al, 1997; Connoly et al, 1998; Fergusson, 1999; Abell et al. 1996, Wolfinger and Gilly, 2001.
Consumer loyalty	Wigard and Benjamin; Business Solution Centre, 1998; Warrington et al, 2000; Hoffman et al, 1999; Coulson, 1999, Adam et al. 2000, Wolfinger and Gilly, 2001
Competitive advantage	Kalakota et al, 1999; Cameron, 1999; Porter and Millar, 1985; Porter, 1986; Hoffman et al, 1999; Straub, 2000; Kare-Silver, 1998, Gunpiero et al. 2000.
Convenient shopping	Hannon, 1988; Commonwealth of Australia, 1998; Quinton, 1999; Cameron, 1999; Winner, 1997.
Better knowledge management	Fusaro, 1998.
Increased sales	Weil and Broadbent, 1998; Leland, 2000, NOIE, 2001.
Acquisition of a niche market	Riggins, 1999.
Challenges	***Literature***
Security	Koved et al, 2001; Gray, 1999; Markey, 1997; Salnoske, 1997; Rankin and Sharp, 2000; Hodges, 1997; Czerniawska and Potter, 1998; Warrington et al, 2000; Engler, 1997; Vartanian, 1997, Kalakota et al. 1996.
Software installation	Hoffman et al, 1999; Abeyesekera et al, 1999.
Web site issues	Watson et al, 1999; Hannon, 1998; Lane, 1997, Kalakota et al. 1996.
People and organisational issues	Corbitt, 2000; Hoffman et al, 1999.
Measuring success	Hoffman et al, 1999; Abeyesekera et al, 1999.
Technology cost	La Plante, 1997, Ba et al. 1999.

Lack of EC infrastructure	Abeyesekera et al, 1999; Hoffman et al, 1999.
Customer service	Primoff, 1998; Whinston et al, 1997; Alter, 1999;
Obtaining senior management support	Poje, 1998, Guariono and Wilemon, 1990.
Customers' old habits	Hoffman et al, 1999; Schwartz, 1999.
Making business known to people	Lowry et al, 1999.
Legal issues	Hoffman et al, 1999; Lawrence et al, 1998, Whinston et al. 1997, CEC Monash University, '99.
Success factors	***Literature***
Secure transactions	Liao and Tow, 2001; Primoff, 1998; Mahadevan, 2000; Warrington et al, 2000; McAndrews, 1999.
Providing online decision support system	Riggins, 1999.
Online catalogue	Aaron et al, 1999;Baron et al, 2000.
Payment via credit card	Panurach, 1996; McAnderws, 1999; Treese and Stewart, 1998; Maxwell et al, 1999.
Electronic payment system	Stewart, 1998; Schneider and Perry, 2001; McAndrews, 1999, Whinston et al. 1997.
Frequently asked questions	Riggins, 1999.
Integrating web site to all business processes	Ruud and Deutz, 1999; McClure, 1998; Zarowin, 1999.
Online personalised recommendations	Riggins, 1999.
Functional web site	Studt, 2000; Riggins, 1999; Liu and Arnett, 2000.
Effective project leader	Folit, 2000, Lucas, 1981; Keen, 1981; Markus, 1983; Jarvenpaa et al. 1991; Thong et al. 1996.
Forming alliances	Segil, 2000; Riggins, 1999; Leland, 2000.
Partnership with suppliers	La Plante, 1997.
Partnership with technology providers	Coulston, 1999.
Appropriate organisational structure	Vankerman and Henderson, 1998; Grenier and Mates, 1995; Tetteh and Burn, 1999; El Sawy, 1999.
Rapid delivery	Rutter and Southerton, 2000; Castellucio, 2000.
Disintermediation	Primoff, 1998; Mahadevan, 2000; Parker, 2000; Riggins, 1999.
More personalised customer service	Piturro, 1999; Mahadevan, 2000; El Sawy, 1999; Commonwealth of Australia, 1999; Baker, 1999.
Advertising in newspapers, magazines, Radio, TV, etc.	Zarowin, 1999.
Advertising online	Minoli and Minoli, 1997; Mahadevan, 2000.
Adequate resources	Dugan, 1999.
Being visionary	Hossain, 1999.

This literature review has paid considerable attention to the success factors, challenges and benefits of electronic commerce. However, because research in this area covers a wide field, it is possible that some success factors, challenges or benefits of EC may have been missed in this review. Remedying these omissions is one of the purposes of the following stages.

CHAPTER THREE RESEARCH METHODOLOGIES

3.1 *Introduction*

This research project investigates the enablers, inhibitors and benefits of electronic commerce among the top 500 Australian companies. In this chapter the methodologies employed in the research will be discussed in detail.

3.2 *The Research Questions*

The key research question for this research is: What are the key success factors that could be established as means of overcoming challenges and achieving benefits for large organisations in Australia involved in electronic commerce?

The subsequent research questions for this research are:

- What are the challenges of electronic commerce that inhibit its successful operation?
- What was the anticipated and actually encountered impact of these challenges?
- What was the anticipated and actually identified impact of the success factors?
- What are the benefits of electronic commerce?
- What were the anticipated and actually achieved benefits of electronic commerce?

Support for these questions from the literature and previous research findings is outlined in Section 3.4 , The Theoretical Framework.

3.3 *Overview of Research Method*

To accomplish this research project both qualitative and quantitative methods have been applied. The research was accomplished in the following four phases:

Phase One – Literature Review

The first phase of this research was an extensive review of the relevant literature from which a number of issues, such as the enablers, inhibitors and benefits of electronic commerce, were identified.

Phase Two - Semi-structured Interviews

This part of the research was exploratory because it provided a better understanding of key concepts and ensured that subsequent research began with initial understanding of the research problem to be investigated (Zikmund, 1991). Research is exploratory in nature, according to Sekaran (1992), when it uses interviewing as a means of gathering the data. In order to explore the electronic commerce issues identified from the literature, interviews were conducted in seven well-established companies in Melbourne and Sydney who use electronic commerce in their businesses.

The participants were sent an interview script (Appendix I) based on findings from the literature review, prior to conducting the interview. After completing an interview, the interview script for the next interview was revised in accordance with new findings. The interviews, which were conducted with the senior managers responsible for electronic commerce in each of participating companies, identified the enablers, inhibitors and benefits of electronic commerce.

The impact of stage two (interviews with senior managers in charge of electronic commerce in seven Australian companies) on stage three (survey of top 500 Australian companies) was significant. Many of factors that were identified during the semi-structured interviews with senior managers in charge of electronic commerce at the seven participating companies were not identified in the literature review. However, all of the factors were included in the survey questionnaire, because they represented the real issues faced by the companies engaged in electronic commerce. Some of the factors identified from the literature had no support from the interviews but they were also included in the survey questionnaire. The reason for this was that the research sought to investigate the views of top 500 Australian companies about the issues that had been identified, regardless of the source of the information.

Phase Three – Postal Questionnaire

Research is, according to Kumar (1996), classified as descriptive when it attempts to systematically describe a situation or to provide information about certain issues. This phase of the research was descriptive since it was based on some previous

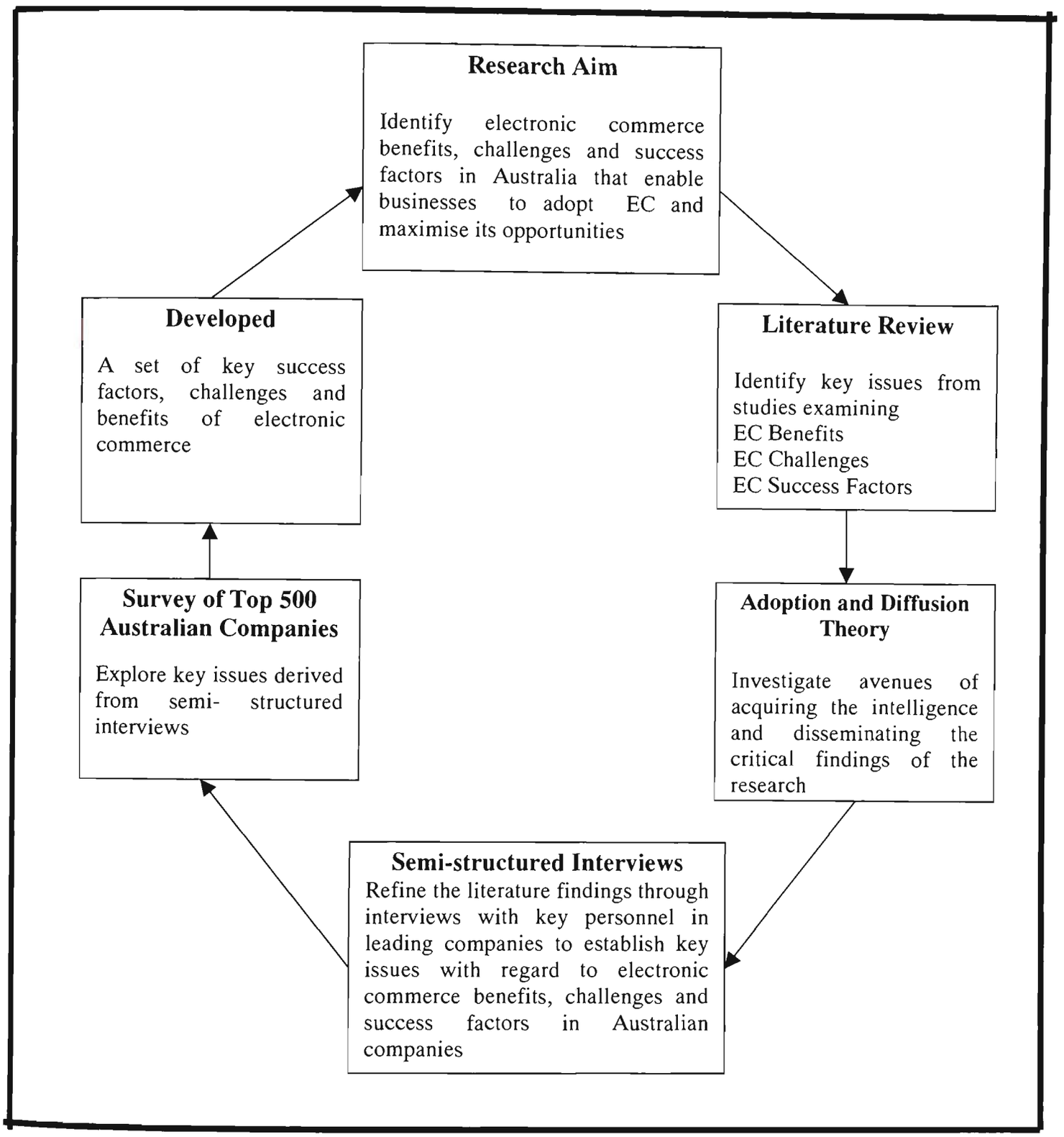
understanding of the nature of the research problem, which was characterised as descriptive by Zikmund (1991). To confirm the findings from the semi-structured interviews, a survey on a larger scale via a postal questionnaire (Appendix II) was undertaken. Because of anecdotal evidence that electronic commerce is more prevalent among well-established companies, the questionnaire was sent to the top 500 Australian companies. The questionnaire was posted because potential respondents were spread over a wide geographical area.

Phase four - Data Analysis

The compiled data from the survey (Appendix III) were analysed using SPSS, PC-based statistical packages in a Windows environment. In accordance with the collated data, appropriate statistical analyses such as the Sign test and the Kruskal-Wallis test were conducted. The Sign test was performed to find out if there was a significant difference between the anticipated and identified enablers, inhibitors and benefits of electronic commerce in the various participating organisations. In order to determine the differences betwen enablers, inhibitors and benefits of electronic commerce between the four industries with the highest response rates and the entire sample, the Kruskal-Wallis test was performed.

A graphic presentation of the research is presented in Figure 3.1.

Figure 3.1 Electronic Commerce Research Circle



3.4 *Theoretical Framework*

According to Sekaran (1992, p.73), the theoretical framework is defined as "a logically developed, described, and elaborated network of associations among variables that have been identified through such processes as interviews, observations, and literature surveys".

The theoretical framework for this thesis is derived from the literature. The key issues identified in this research were drawn from the literature review, the semi-structured interviews with seven large organisations involved in electronic commerce and the survey of the top 500 Australian companies. The variables that are considered relevant to this research are the challenges, success factors and benefits of electronic commerce.

It is expected that some of success factors positively influence some of the challenges, by providing solutions for them. For example, appropriate organisational structure as a success factor is expected to influence a company's ability to respond successfully to the challenges of electronic commerce (Corbitt, 2000). Moreover, it is also expected that an online catalogue as a success factor influences the challenges of having better customer service (Primoff, 1998).

On the other hand, it is expected that some of the success factors positively influence some of the benefits that are achievable in the area of electronic commerce. For example, integrating the web site into all business processes, as a success factor, is expected to influence a business's efficiency, which is one of the benefits of electronic commerce according to the literature (Ruud and Deutz, 1999). It is also expected that the availability of frequently asked questions as a success factor, influences customer loyalty (Riggins, 1999).

Not only the literature, but also previous research findings indicate we could expect that relationships between some of success factors and both challenges and benefits, do exist. For example better customer service as a success factor, embodied in the presence of customer service representative online, is likely to increase customer loyalty, as a benefit of electronic commerce (Wolfinberger and Gilly, 2001). On the other hand using any form of communication or advertising, as a success factor,

helps to overcome the challenge of making business known to users (Lowry et al, 1999).

The existence of these challenges, success factors and benefits of electronic commerce among large organisations in Australia and the existence of the possible relationships between them will be investigated through semi-structured interviews and a survey of the top 500 Australian companies.

Finally, an attempt to establish a set of key success factors as a means of overcoming the challenges and achieving the benefits of electronic commerce will be investigated. This set of factors will reflect major findings from the literature, prior research, the semi-structured interviews with the seven organisations involved in electronic commerce and the survey of the top 500 Australian companies.

3.5 *Literature Review*

The findings from the literature review revealed that electronic commerce is capable of producing benefits if its challenges are properly addressed and overcome by the identified success factors.

The major benefits companies are able to achieve from electronic commerce are business efficiency, reduced operating costs, acquisition of a niche market, a retained and expanded customer base, customer loyalty and competitive advantage (Cameron, 1999; Car, 1997; Nouwens and Bouwman, 1999; Warrington, 2000; Kalakota et al, 1999)

The major challenges business are encountering in electronic commerce are security, web site issues, technology cost, managing the change, obtaining senior management support, customer service and legal issues (Warrington, 2000; Watson et al, 1999; La Plante, 1999, Whinston et al, 1997, Hoffman et al, 1999).

Among the major success factors in overcoming the challenges and achieving the benefits of electronic commerce are secure transactions, online catalogue, electronic payment systems, an effective project leader, disintermediation and adequate

resources (Aaron et al, 1999; Mohadeven, 2000; Segil, 2000; Folit, 2000; Dugan, 1999).

The purpose of the literature review was to review the relevant literature relating to electronic commerce. It is very important in a literature review, according to Sekaran (1992), to make sure that no important findings in the particular field are ignored. Ghauri et al. (1995), on the other hand, argue that the primary purposes of a literature review is to build on prior knowledge.

The literature review has provided the necessary background and framework for the discussions that are presented in chapters three through seven. The enablers, inhibitors and benefits of electronic commerce throughout the world, and in Australia, are identified from the literature. It was also established from the literature that many Australian business leaders, compared to the leaders of other developed countries, appear to have adopted a 'wait and see' attitude towards the uptake of electronic commerce.

One of the prime purposes of the literature review was to position this research in the field of electronic commerce. Thus, to enable businesses to be successful in this field it is imperative to identify, evaluate and disseminate the factors that are critical for success. This research therefore identifies the enablers, inhibitors and benefits of electronic commerce in Australia that will help business enterprises to trade electronically.

3.6 *Semi-structured Interviews*

The second phase of this research was exploratory, undertaken to ensure that subsequent research began with an initial understanding of the research problem to be investigated (Zikmund, 1991). The semi-structured interviews helped to gain an insight into the issues that needed to be addressed to enable organisations to maximise the potential of electronic commerce.

According to Yin (1989, pp. 90 – 91) "interviews are an essential source of case study evidence, because most case studies are about human affairs. These human

affairs should be reported and interpreted through the eyes of specific interviewees, and well-informed respondents can provide important insights into a situation".

Yin (1989) also stresses the importance of following a protocol when conducting the interviews. The protocol for these semi-structured interviews included the development of an interview script in accordance with the requirements of the Victoria University Ethics Committee. This ensured that no questions were overlooked and that the interview script was the same for all interviewees.

According to Zikmund (1991), this type of exploratory research is appropriate where there is a limited amount of knowledge about a research issue. A hundred of the largest Australian companies located in Melbourne and Sydney were approached to participate and seven agreed to be interviewed. The interviews were conducted with the senior managers in charge of electronic commerce at those seven companies (six Melbourne-based and one Sydney-based).

A number of open-ended questions were used to overcome the problems of closed questions and formal, structured interviews which do not allow responses to be probed more deeply and do not allow follow-up questions Babbie (1990),. Open-ended questions can be used in interviews to allow respondents to express their own opinions and give them an opportunity to elaborate on something they would not be able to do if the response had to be a closed one (Kidder and Judd, 1986). This view is supported by Yin (1989) whose opinion is that open-ended questions are a way to gain greater insight into the matter investigated.

Open-ended questions were extensively used in the interviews with the respondents from the seven participating companies, allowing more detailed responses. Prior to conducting the interviews, the managers were sent an interview script (Appendix I), in order for them to know what was involved. This procedure was consistent in all seven interviews.

During the interviews many additional questions were generated in order to clarify or qualify replies,. With the permission of the interviewee, all interviews were recorded on tape and later transcribed. In all cases, the interviewees provided their company's

current web address, so that the investigator could find data about the company's history, product and services, annual report, mission statement, etc. These semi-structured interviews helped gain an insight into electronic commerce issues that need to be addressed to enable organisations to maximise the potential of electronic commerce.

The support for using qualitative data gathering techniques, especially in information systems research is evident through a number of published articles (Benbasat et al., 1987; Orlikowski and Baroudi, 1991: Walsham, 1995; Ross et al., 1999).

Furthermore, with regard to interviews as a method of gathering data, Walsham (1995, p. 78) asserts "interviews are the primary data source, since it is through this method that the researcher can best access the interpretations that participants have regarding the actions and events which have or are taking place". This method has been used by other researchers in the area of information systems and technical communication, such as Orlikowski and Gash (1994); Singh (1997); Fisher (1998 a) and so forth, which demonstrate its acceptance as a reliable method.

Each semi-structured interview covered the following points

- Company profile
- Company's products and services
- Electronic commerce at the company
- Enablers of electronic commerce identified at the company
- Inhibitors of electronic commerce encountered at the company
- Electronic commerce benefits achieved by the company
- Future of electronic commerce at the company

3.7 *Analysis of Semi-structured Interviews*

The semi-structured interviews were analysed using content analysis to identify the enablers of electronic commerce and the benefits achieved by participating organisations, as well as to recognise the inhibitors of electronic commerce encountered by the participants. Content Analysis was chosen because it allows responses on each issue to be analysed objectively and systematically (Zikmund,

1991). It also allows investigators to decide and judge what methods are most appropriate because "there is no simple *right way* to do content analysis" (Weber, 1990, p.13). Content analysis has been used very often in advertising, marketing, Internet and other studies (Abernethy et al. 1996; Ghose et al. 1998; Tan et al. 1999)

Data from the semi-structured interviews, and analysis of the data are presented in chapter four. Those findings together with the findings from the literature, have provided the basis for the third phase of research, the survey of the top 500 Australian companies via postal questionnaire.

The analysis of semi-structured interviews helped in identifying a number of electronic commerce issues. These were then further investigated in phase three of the research. More particularly, phase three of the research established:

- The factors that contribute to success in electronic commerce;
- The inhibitors faced by the companies in electronic commerce;
- The benefits of electronic commerce;

After conducting seven semi-structured interviews, the issue of the internal validity of the data collated from this stage of the research had to be addressed. Internal validity, according to Zikmund (1991) refers to the interpretation of the cause-and-effect relationships that might exist between variables. On the basis of the semi-structured interviews with managers from seven organisations involved in electronic commerce in Australia, it would be unsafe to draw conclusions about causal relationships between variables. This assessment was based on the observation that "even in a tightly controlled lab experiment" (Sekaran, 1992, p. 133), there is a possibility of several threats to internal validity (history effects, selection bias, etc.).

A trade-off between internal and external validity (Zikmund, 1991), is found as a solution to a problem of internal validity. According to Sekeran (1992, p.127), "If we want high internal validity, we should be willing to settle for lower external validity and vice versa". Therefore, the existence of challenges, success factors and benefits of electronic commerce, identified in the semi-structured interviews, and the relationships among them will be tested in the wider field (among the top 500 Australian

companies). This will give the researcher the ability to generalise beyond the data acquired through semi-structured interviews.

3.8 *Assumptions*

Two assumptions were made in relation to the semi-structured interviews:

1. All the respondents were able to comprehend the questions asked in the sense intended by the investigator.
2. Acquired data and responses given to the investigator by the companies' managers were sincere and accurate.

3.9 *Limitations of the Semi-structured Interviews Method*

Since six out of the seven companies chosen for the semi-structured interviews were located in Melbourne and one in Sydney, the research was limited to only two Australian cities. This was done for two reasons, the first being time and resource constraints, and the second the fact that the majority of large organisations in Australia have their headquarters located in those two cities.

Since the participating companies were reluctant to provide any other information that was not publicly available, such as organisational charts, layout of departments, etc., the research was limited to information available on their web sites.

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Since conducting semi-structured interviews requires the cooperation of the people interviewed, their honesty, carefulness and willingness to reveal the reality about the state of electronic commerce issues in the company potentially limited this study as well.

3.10 *Security and Non-disclosure Arrangements*

The investigator informed the participants in the interviews that they were free to refuse to disclose any detail they did not feel comfortable with or to refuse to answer any question they felt intrusive. Furthermore, because of the confidentiality agreement, the names of the participating companies and of the respondents were not to be identified at any stage. Finally, the acquired data are secured in a locked filing cabinet at Victoria University, and access is restricted to the investigator and his supervisor.

3.11 *Postal Questionnaire*

This phase of the research was accomplished via postal questionnaires sent to the top 500 Australian companies. The use of questionnaires is among the most widely used techniques for gathering data (De Vaus, 1990). This is also the case in the information systems field (Lawrence and Low, 1993; Galliers, 1994; Rouse et al., 1995). The main advantage of a postal questionnaire is that it offers great anonymity (Kumar, 1996), and is suitable for vast geographical coverage (Sekaran, 1992). Furthermore, as suggested by Kumar (1996, p. 110), "if potential respondents are scattered over a wide geographical area, you have no choice but to use a questionnaire, as interviewing in these circumstances would be extremely expensive". Therefore, since this is a national survey, a postal questionnaire was considered the most appropriate for this part of the research.

As suggested by Zikmund (1991) and Kumar (1996), in order for respondents to comprehend questions asked, in the sense intended by the investigator, the questions must be simple and straightforward. Thus the postal questionnaires, with a list of questions that were easy to read and follow were sent to the senior manager responsible for electronic commerce at each company. The questionnaire was accompanied by a covering letter to explain the purpose of the research and the need for them to participate. A self-addressed, stamped envelope was enclosed for their responses.

3.12 *Limitations of Postal Questionnaire*

The following are the limitations of postal questionnaire:

- Lack of opportunity to clarify issues is a real possibility if the respondent does not understand some questions (Kumar, 1996).
- Questionnaires are notorious for their low response rate (Kerlinger, 1986 and Sekaran, 1992).
- The response to a question may be influenced by the response to other questions (Kumar, 1996).

3.13 *Postal Questionnaire Design*

Based on the findings from the literature review and the semi-structured interviews in this research, the questionnaire was similar to that used in the semi-structured interviews. Its main objectives were to identify the following among the top 500 Australian companies:

- Success factors of electronic commerce
- Challenges of electronic commerce that inhibit its successful operation
- Benefits of electronic commerce

The postal questionnaire, attached as Appendix II, comprised the following sections:

Section A was made up of questions designed to acquire information about the company. The questions were about the industry in which the company operates, the number of employees and the use of electronic commerce in the company.

Section B was about the respondents' level of education and their job title.

Section C was about the challenges or problems of electronic commerce that might be experienced by the sample of surveyed companies. Respondents were presented with 21 challenges identified from the literature and the semi-structured interviews. They were asked to indicate the anticipated and experienced impact of each of the challenges presented. The participants were asked to circle one response for each item in both anticipated and experienced part of the question, on a Likert scale. The answers on the Likert scale, ranged from 0 indicating no impact to 5 indicating the greatest impact. These numbers represented a relationship, indicating that 5 was higher than 4, 4 was higher than 3, 3 was higher than 2 and 2 was higher than 1.

Section D of the questionnaire identified the enablers of electronic commerce that might be identified by the sample of surveyed companies. Respondents were presented with 38 enablers identified from the literature and the semi-structured interviews. They were asked to indicate the anticipated and identified importance of each enabler presented, by circling one response for each item in both anticipated and identified parts of the question, on a Likert scale. The answers on the Likert scale

ranged from 0 indicating that enabler was not anticipated or identified, to 1 indicating that the enabler was the least important and 5, indicating that the enabler was the most important.

Section E of the questionnaire identified the benefits of electronic commerce that might be achieved by the sample of surveyed companies. Respondents were presented with 14 benefits identified from the literature and the semi-structured interviews. They were asked to indicate anticipated and achieved benefits presented, by circling one response for each item in both anticipated and achieved parts of the question, on a Likert scale. The answers on the Likert scale, ranged from 0 indicating that benefit was not anticipated or achieved, to 1 indicating that minimum benefit was anticipated or achieved and 5, indicating that maximum benefit was anticipated or achieved.

In order to explore the participating companies' awareness and expectations with regard to electronic commerce before their involvement with it, questions about anticipating the challenges, success factors and benefits of EC were included in the questionnaire. Furthermore, to find out what the reality was after they became involved with electronic commerce, questions about the challenges they encountered, the success factors they identified and the benefits they achieved, were included in questionnaire as well.

The Sign test conducted afterwards helped to gain an insight into the ability of the participating companies to estimate the magnitude of each of the challenges, success factors and benefits. This test is often used on occasions such as "pre-test post-test" (Cramer, 1998) and "before and after study" (Siegel, 1988). Similar research with pre-adoption and post adoption examination had been undertaken in the information systems fields by authors such as Kaharana, Straub and Cherwany (1999).

The basic idea behind this was to assess the ability of Australian companies to:

- Anticipate the challenges of electronic commerce that lay ahead,
- Foresee the factors that would influence their electronic commerce success, and
- Estimate the benefits of electronic commerce they would achieve.

Rensis Likert developed Likert scales in 1932, to measure the degree of agreement or disagreement with constructed statements. Likert scales are commonly used in business research in order to make valuable conclusions (Sekaran, 1992), because they allow participants to respond with degrees of agreement or disagreement (Kerlinger, F., 1986) or to indicate how they agree or disagree with a statement related to a certain issue (Zikmund, 1991). Likert and similar scales have been used by many researchers in information systems and other fields, such as Lawrence and Law (1993); Boynton, Zmud and Jacobs (1994); Blackwell (1995); Gearson and Gearson (1995); Revenaugh and Lu, (1997) and Fisher (1998b).

3.14 *Information Confidentiality*

In order to maximise participation and candid answers, the participants were assured of:

- Confidentiality and non-disclosure provisions of the research;
- Readiness on the side of the investigator to make research findings available to all participants, should they require it.

3.15 *Questionnaire and Accompanying Letters*

Postal Questionnaire

On 21 August 2000 the questionnaire, attached as Appendix II, was sent to the senior managers responsible for electronic commerce at each company, with a covering letter and a pre-paid self-addressed envelope.

Covering Letter

A covering letter used to explain the purpose of the research and the need for managers to participate, was sent with the questionnaire on 21 August 2000, by the Victoria University postal service.

Reminder Letter

A reminder letter was sent out to senior managers responsible for electronic commerce at each company on 11 September 2000. The need for a certain percentage of responses for the study to be valid was explained in the letter.

3.16 *Response*

By early September 2000 the following responses were received:

- 12 returned undelivered by Australia Post, as there was no forwarding address;
- 7 returned, as the addressees were no longer with the company;
- 1 indicated that it was their company policy not to respond to surveys;
- 14 indicated that they were not involved in electronic commerce;
- 6 returned with no explanation for not participating;
- 66 completed questionnaires.

As the response rate was less than 15%, it initiated the need for a reminder letter to be sent to the companies. In response to the reminder letter, the following responses were received:

- 10 indicated that they were not involved in electronic commerce;
- 2 returned with no explanation for not participating;
- 35 completed questionnaires.

A total of 101 responses, with response rate of 22%, were considered sufficient for the analysis, which is presented in detail in chapter six.

3.17 *Postal Questionnaire Survey Analysis*

The participants in the survey were asked in section C of the questionnaire, to indicate anticipated and experienced impact of each Inhibitor presented, by circling one response for each item in both anticipated and experienced part of the question, from the Likert scale. They were also asked to indicate their answers in the same manner, in sections D and E. The answers were presented on the Likert scale indicating:

- 0 not anticipated or encountered impact
- 1 lowest anticipated or encountered impact
- 2 below average anticipated or encountered impact
- 3 average anticipated or encountered impact
- 4 above average anticipated or encountered impact
- 5 most anticipated or encountered impact

These numbers represented relationships indicating that 5 was better than 4, 4 was better than 3, 3 was better than 2 and 2 was better than 1. However, even though 2 was greater than 1, that did not mean that 2 was twice as large as 1. Also "the difference between 'above average' and 'average' or between 'average' and 'below average' cannot be ascertained" (Kumar, 1996, p. 59).

When this sort of data is gathered from a survey, it is described as ordinal data (Kerlinger, 1986; Kumar, R., 1996). According to Jordon (1985), responses that are frequently scaled, from 1 to 5, 1 to 7, or 1 to 10 are ordinal data. Therefore, because the acquired data were measured on an ordinal scale, it was appropriate to perform non-parametric statistical tests (Siegel, 1988).

Non-parametric tests are described as statistical procedures that use nominal or ordinal-scaled data (Zikmund, 1991; Kerlinger, 1986; Jordon, 1985). The advantages of non-parametric statistical tests are that they typically need fewer assumptions about the data and are capable of analysing the data inherently in ranks and also of analysing data whose seemingly numerical scores have the strength of ranks (Siegel, 1988).

In order to explore participating companies' awareness and expectations of e-commerce prior to their involvement and subsequently, it was important to find out if there is a significant difference between anticipated and encountered enablers, inhibitors and benefits of electronic commerce. Significance here is a measure of the confidence that can be placed in a result that is not merely a matter of chance. A level of significance equal or less than the predetermined level allows us to conclude that the observed association in the sample "is not a result of chance deviation from independence in population but rather represents a genuine relation between the variables in population" (Siegel, 1988, p. 229).

This investigation was accomplished through the Sign test that looks at the direction of differences between two measures; it is particularly useful where quantitative measurements are impossible or not feasible (Siegel, 1988). The Sign test helps to look at awareness and attitudes among participants towards particular issues, both prior to being involved and after being involved in electronic commerce. Another feature of the Sign test is that it compares the number of positive and negative

differences between scores allocated to the same or matched samples (Cramer, 1998).

When the Sign test is performed, the change in values between the two occasions (in this case anticipated and encountered factors) is recorded, giving minus (-) if the second score is larger than the first, a plus (+) if it is smaller, and a zero (0) if there is no difference. Then the number of pluses and minuses are counted. After that the z value is computed, using the following formula:

$$Z = \frac{(n + 0.5) - N/2}{0.5 + \sqrt{N}}$$

where,
n is the lower of the two frequencies, and
N is the total number of pluses and minuses.

When the z value is computed, it is looked up in the table (appendix 2, Cramer, 1998, p. 407). If the probability value is greater than 0.05, the difference is not significant. If, however, the probability value is less than 0.05, the difference is statistically significant.

The analysis of the survey presented in chapter six has revealed that many of the participants, for example, had high expectations about the benefits of electronic commerce, but did not quite achieve them in reality. The Sign tests were performed for all the enablers, inhibitors and benefits of electronic commerce, and the conclusions are presented in chapter five of the thesis.

In order to establish the rank of the identified enablers, encountered challenges and achieved benefits of electronic commerce in the sample of surveyed companies, their medians were computed. Tables with descending order of electronic commerce challenges, success factors and benefits are presented in chapter five.

To find out if there is a difference between the ranking of enablers, inhibitors and benefits of electronic commerce, in the four industries with the highest response rate, and those in the entire sample, the same computations were undertaken. Thus, to

establish the rank of the identified enablers, encountered inhibitors and achieved benefits of electronic commerce in those industries, their medians were computed. Tables with descending order of electronic commerce challenges, success factors and benefits in all four industries are also presented in chapter six. The analysis has shown that the vast majority of enablers, inhibitors and benefits in these industries have similar rankings to those in the entire sample. The summary tables and the analysis are presented in chapter five as well.

To further the analysis and to find out whether the differences between enablers, inhibitors and benefits of electronic commerce in these four industries, and the entire sample, are *statistically significant,* Kruskal-Wallis tests were performed.

Because it allows analysis of more than two independent groups of ordinal data (Christensen and Stoup, 1986) the Kruskal-Wallis test was appropriate for this analysis. The Kruskal-Wallis test is the non-parametric equivalent of one-way analysis of variance (ANOVA), and an extension of the Mann-Witney test. It is generally conducted in order to find out whether the differences among the samples signify real population differences or the kind of variations to be expected from the same population. (Siegel, 1988). The Kruskal-Wallis test for enablers, inhibitors and benefits of electronic commerce from the four industries is presented in chapter five.

To further explore relationships between the success factors and challenges and between the success factors and benefits of electronic commerce, a correlation analysis was conducted. Correlation analysis is the most popular technique for indicating the relationship between two variables, whose correlation coefficient statistically measures the association between them (Zikmund, 1991).

The correlation coefficient 'r' as a measure of association between two variables ranges from +1.0 to –1.0. The value of 'r' close to +1.0 indicates that there is a strong positive relationship between variables. On the other hand, the value of 'r' close to –1.0 this indicates that there is a strong negative relationship between variables. Finally, no correlation is indicated if 'r' = 0 (Zikmund, 1991).

In non-parametric cases, the usual measure of correlation is the Spearman rank-order correlation coefficient, which is capable of analysing the data whose seemingly numerical scores have the strength of ranks (Siegel, 1988). The Spearman rank-order correlation coefficient *rs* "was the earliest to be developed and is perhaps the best known today. It is a measure of association between two variables, which requires that both variables be measured in at least ordinal scale" (Siegel, 1988, p. 235). As the analysed data were ordinal this correlation analysis was suitable.

Tables presenting the correlation analysis and explanations are presented in Chapter Five. The value of correlation coefficient 'r' and its direction (plus or minus), as an indicator of positive or negative correlation, together with the level of significance, as an indicator of the strength of the correlation, is presented in Tables 5.31 and 5.32.

The findings of the postal questionnaire survey analysis were combined with the findings of the semi-structured interviews, presented in chapter four, to describe a set of success factors, as well as the sets of challenges and benefits of electronic commerce.

All the acquired data were analysed using the Statistical Package for Social Science (SPSS) for Windows. This package was chosen because it "has an extensive variety of statistical procedures, is considered easy to learn and as a consequence is widely taught and used" (Cramer, 1998, p. xx).

3.18 *Conclusion*

The qualitative and quantitative methodologies discussed in this chapter enabled this research project to be conducted in a systematic manner. This ultimately helped in formulating questions for both the semi-structured interviews and the survey questionnaire. The knowledge gained from the research was used to create sets of enablers, inhibitors and benefits of electronic commerce, that companies might embrace in dealing with a variety of issues in electronic commerce.

CHAPTER FOUR SEVEN SEMI-STRUCTURED INTERVIEWS

4.1 *Introduction*

This part of the research was undertaken to explore electronic commerce issues identified from the literature, as presented in Table 2.1 in chapter 2 of this thesis, and to compare those findings with the state of electronic commerce in well-established companies that are involved in it. The other reason for this part of the research was to build the base for the subsequent research - the postal questionnaire. Seven interviews were conducted in seven companies in Melbourne and Sydney, which use electronic commerce in their businesses. The interviews, conducted with senior managers responsible for electronic commerce in each of those companies, discussed the success factors, challenges and benefits of electronic commerce they had identified. For reasons of confidentiality, the names of the participating companies are not identified.

The semi-structured interviews covered the following points:

- Company profile
- Company's products and services
- Electronic commerce at the company
- Electronic commerce benefits achieved by the company
- Challenges of electronic commerce encountered at the company
- Success factors of electronic commerce identified at the company
- Future of electronic commerce at the company

A summary of the participating companies' generic descriptions, and titles of the interviewees, is presented in Table 4.1.

Table 4.1 Companies' Generic Description and Job Title of the Interviewees

COMPANY	GENERIC DESCRIPTION	JOB TITLE OF THE INTERVIEWEE
A	International manufacturer of telecommunication equipment	Leader of Electronic Commerce Project. *When quoted* (**a**)
B	Consulting company	Manager of Electronic Commerce. *When quoted* (**b**)
C	Publishing company	Manager of Electronic Commerce, when quoted (**c**)
D	Vehicle manufacturer	Manager of IT Department. *When quoted* (**d**)
E	Wholesaler and retailer	Managing Director., *When quoted* (**e**)
F	Finance company	Manager of B2B Electronic Commerce. *When quoted* (**f**)
G	Manufacturer and retailer	Head of Electronic Business Unit. *When quoted* (**g**)

4.2 *Company A*

4.2.1 Company Profile

Company A is recognised as a significant manufacturer of communication tools and a player in the telecommunications and data communications world. It delivers advanced communication solutions for mobile and fixed networks to companies and consumers throughout the world. This company has a strong presence in over 140 countries. Australia represents a very significant market for this global company, with an annual turnover of more than one billion dollars. The company's success in Australia started over 100 years ago, selling its first telephone in 1890, and establishing its first Australian sales office in 1951. Today, an estimated 80 per cent of all calls in Australia are switched via this company's technology or equipment. Almost 40% of mobile calls in the world are connected through their system.

The company has been established as the hub for many parent company activities in the broader Asian region. For example, it has been appointed the regional hub for its parent company professional services in Asia Pacific, along with being established as one of only three Global Configuration Centres within the worldwide parent company group – supplying software, hardware and services to customers in at least 20 Asian countries.

Company A is committed to the growth of the Australian data and voice communications markets. It has reinforced its position by investment in research and development and by establishing partnerships with leading universities, institutions and special research bodies. Furthermore, the parent company contributes approximately 19% of revenue to Research and Development activities on a global level. This commitment to R&D, has contributed to the company's ranking among the top five most innovative companies in Australia in 1998 (BRW, 8 June 1998).

One of Australia's largest private sector IT&T R&D facilities, is also held by Company A. It serves as a test bed and a market development hub for broadband, multimedia, data and Internet global applications. Over the last few years, the company has built up a significant competence in broadband and multimedia, as a result of strategic initiatives and co-operation with Telstra and other operators in Australia and the region.

Its centre for the creation of new products and services in Melbourne is a sister facility to the parent company's successful Cyber Lab in New York's Silicon Valley. The Melbourne and New York centres represent a focus for the company's leadership role in the supply of network systems for multimedia, Internet and similar types of applications. Working in the centre at the moment are:

- Multimedia Communications Group
- Advanced Technology Group
- Future Development Group
- E-Commerce Solutions
- Call Centre Consulting
- Enterprise Data Networks
- ISP Group

4.2.2 Products and Services

In the mobile phone market, Company A holds a strong market share. Globally, it sells mobile phones in over 90 countries and is among the top suppliers of mobile systems. It also has a complete range of mobile communication devices for

customers whose mobile communication requirements go beyond the spoken word. The company provides an integrated suite of Data & IP Communications for Network Operators & ISP, including IP, Wireless Data and Third Generation products and solutions. It also provides complete telecom management systems and service solutions for both new market entrants and established operators of fixed, mobile, IP and data networks.

For Internet Service Providers, Company A provides a range of products and solutions, including hardware, software and consulting services. It also provides integrated IP Solutions ranging from network infrastructure to value-added end-user applications. These allow users to exchange voice, data and multimedia from one device. The company is one of Australia's largest providers of IT&T consulting and managed services to both large and small organisations, helping them increase their competitive advantage and to be successful.

Deploying its local expertise and global resources, the company offers the following services to its customers:

- Conducting extensive in-depth preliminary business case analyses to help them understand the Australian environment.
- The identification and research of market opportunities such as e-commerce and multi-media.
- Contributing the appropriate hardware, finance and operational systems.
- Development of a network design that meets customers' specifications.
- Modelling business scenarios evaluating the feasibility of development (eg, National vs Regional vs CBD deployment).
- Equipping, operating, monitoring and maintaining networks – a complete end-to-end solution.

The company also uses its experience as a provider of communications solutions to help businesses to provide better services, to improve cost-efficiency and to gain competitive advantage. Its business communications solutions include:

- Voice networks which deliver a complete communication system for the whole businesses.
- Data network which provide solutions for the converged world of voice and data.
- Wireless Solutions which provide ways to achieve mobility within a business.
- Electronic business which helps businesses implement and integrate complete innovative e-commerce solutions to meet their needs.
- Business Consulting which provides end-to-end IT&T consulting and integration services to help businesses achieve their business goals.
- Managed Services which provide the solutions and services to efficiently manage business communications for maximum performance and competitiveness.

4.2.3 Electronic Commerce at Company A

Company A has established both electronic and traditional business. Electronic commerce was established in 1998. The marketing and selling aspects of the company's business are electronic. The media of electronic commerce the company uses are the Internet, Intranet and EDI. Business-to-business and business-to-consumer are the models of their electronic commerce. Because the system is still immature the company's electronic commerce is not fully electronic yet (ie capable of handling e-payments, e-delivery, e-trading of goods and services), but they hope to achieve it fully in the near future. The interviewee from company A was the Leader of the Electronic Commerce project.

The highlights of the benefits, challenges and success factors at company A are presented in Table 4.2.

Table 4.2 Benefits, Challenges and Success Factors Identified at Company A

Benefits	Challenges	Success Factors
Business efficiency	Measuring success	Secure transactions
Competitive advantage	Web site issues	Frequently asked questions
Consumers loyalty	Acquiring IT skilled people	Availability of new intermediaries
	Employee resistance	Online tracking facilities
		Regular update of the web site
		Functional/user-friendly web site
		Integrating web site to all business processes
		Online catalogue
		Web site listed on search engines
		Effective project leader
		Top management support
		Cross-functional project team
		Active role of IT department
		Appropriate organisational structure
		Partnership with suppliers
		Appropriate sociotechnocal policy
		Rapid delivery
		More personalised customer service
		Adequate resources
		Advertising in newspaper, magazines, Radio, TV, etc.

From Table 4.2 it is interesting to note that company A has achieved only three benefits and encountered four challenges of electronic commerce. However, it has identified 20 success factors of electronic commerce.

4.2.3.1 Electronic Commerce Benefits

The biggest benefits company A has achieved as a result of introducing electronic commerce are:

Business Efficiency

As a result of being engaged in electronic commerce the company has, to some degree, achieved business efficiency. According to the interviewee "this has been achieved through faster delivery, because of the fact that employees need a minimum of assistance, etc. However, there is still a lot of room for further improvements".

Customer Loyalty

Company A, according to the leader of electronic commerce project, "has developed customer loyalty, as a result of introducing electronic commerce, by being responsive to new ideas and strategies, etc.". Their customers are realising how easy it is to purchase from the company and so they subsequently make further purchases. They often also ring up and express interest in other products.

Competitive Advantage

The company is certain it has gained competitive advantage as a result of introducing electronic commerce. This is based on fact that, "of all our competitors, only one offers its products online" (a). At the same time it has gained a good image for the company among both consumers and competitors. Overall, the company has also increased its sales.

4.2.3.2 Electronic Commerce Challenges

The most frequently encountered challenges of electronic commerce at Company A were as follows:

Employee Resistance Towards Electronic Commerce

There was minimal employee resistance towards electronic commerce at Company A. The reason for the low level of resistance lies in the fact that it is a company with a strong background in technology. "The typical resistance we had was in trying to link all the various components of electronic commerce together" says the interviewee. In that process, for example, the logistics department was concerned that the work has to be done one way and the customer service department thought differently. However, by sticking with the organisational structure in place the problem was solved, and the officials would now really call it hesitation rather than resistance.

Acquiring IT-Skilled People

The next challenge was to acquire new people with IT skills and knowledge in the area of electronic commerce. According to the interviewee "to find skilled people the company had to do a lot of research outside, as well as inside of the company.

However, with the support and recommendation from the senior managers, not many additional people from outside were employed. The majority of people were recruited from within the company".

Web Site Issues

When the company got involved in electronic commerce many people found the web site issues a bit confusing. Those problems were, according to the leader of electronic commerce project, "with the layout of the web site and the design of a list of options displayed on a visual display". However, later on it became very straight-forward.

Software Compatibility

Company A had a problem with software compatibility, "mainly because the web developer had the latest software and the company didn't" (a). In order to avoid future problems the company's policy is that IT department has to take an active role in issues such as software compatibility, investigate it and clear/OK everything before the installation. Having a pro-active project leader as well is a step toward elimination of such problems.

Other Challenges

One of the problems, that can affect electronic commerce in general, as seen at Company A, is the fact that a lot of companies falsely claim to be experts in electronic commerce. No company should promise anything it cannot deliver. In their opinion something like the Australian Marketing Institute, that is up to date and can offer credible information about electronic commerce, is needed.

4.2.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company A:

Top Management Support

Top management support is seen at Company A as one of the biggest success factors. According to the interviewee "the company could have the best electronic commerce

strategy but if we do not have senior management support we are not going to get our budget, and consequently we are not going to get anything that we need to make it work".

Cross-functional Project Team

A cross-functional project team ensures that electronic commerce gets support from any department it needs. It includes marketing, logistics, customer service, sales, portfolio managers, etc. This project team is drawn from all the departments involved in the company's daily business. "Without a cross-functional team, and a realisation of what it takes to get products to the consumer, there is no way electronic commerce could function" (a).

Active Role of IT Department

The active role of the IT department at Company A is definitely seen as a very important success factor. The "IT department has to make sure everything that is implemented, from the web site design to security issues, is done in an appropriate way", says the interviewee.

Effective Project Leader

The role of a project leader is critical. The project leader has to look at the project from the strategic point of view and from the operational point of view. "He/she must be able to see what is happening now, what might happen in the future and also what the competitors are doing", says the leader of the electronic commerce project. The leader has to make sure he/she is looking at this from an overall perspective and also recognise what is achievable from the company's point of view.

Appropriate Sociotechnical Policy

An appropriate sociotechnical policy is important because there has to be a balance between the social behaviour and the skills of employees. In other words, according to the interviewee "the right combination of personalities and the core skills that are needed is desirable".

Adequate Resources

Although many companies say they minimise costs with electronic commerce, "it is this company's view that to make electronic commerce run quite efficiently adequate resources are required" (a).

Appropriate Organisational Structure

According to the interviewee "appropriate organization structure is an important success factor since electronic commerce needs support from other departments, regardless of the fact that many of the jobs are automated".

Secure Transactions

Secure transactions are of the utmost importance as a success factor. "If we do not provide secure transactions people are not going to engage in electronic commerce with our company" (a). On the other hand, companies have to educate consumers about security issues, which in turn helps them to improve their image, consequently improving both sales and efficiency.

Integrating the Web Site to All Processes

Integrating the company's web site to all business processes is very important. "We do not want to run the operation independently, as the company doesn't have the synergy and consequently it is hard to meet the company's objectives" (a). Furthermore, it gives the company a very good image among its competitors.

Partnership With Suppliers

Partnership with suppliers is important. "If our link with the suppliers is broken in any way, we are not going to be efficient, our inventories are not going to be sufficient and we might lose customers, which is something no company wants" says the interviewee. As a general rule, it is better to have a supplier who is reliable but not cheap, than one who is cheap but not reliable.

Functional and User-friendly Web Site

Web site design is very critical. The web site has to be functional and user-friendly. "If this is not the case, and if the potential customers are not able to easily access the information, they will go somewhere else and won't come back" (a).

Regular Update of the Content of the Web Site

A major purpose of a web site is to provide up-to-date information. "Regular updating of the content of the company's web site is one of our priorities, because it helps the company to become and stay dynamic and to attract customer loyalty" says the interviewee.

Web Site Listed on Critical Search Engines

This company web site is listed on several leading search engines. The reason for this lies in the awareness that if the company is not registered with the main search engines, and if it does not have its key words registered with them (such as 'mobile phones'), obviously it will be missing customers. It gives the company a certain degree of competitive advantage as well. Furthermore, "if the company's web site is not on the main search engines and the company rely only on people who know our web site, that is not good enough" (a).

Online Catalogue

An online catalogue is something, according to the company's electronic commerce project leader, that customers really look for, to check out features, brands, etc. wherever they are and whenever they want to. The company also makes sure that online catalogues are updated regularly since they can enhance customers' perceptions as well.

Online Tracking Facilities

Online tracking facilities "allow us to know our potential customers, who is navigating our site, what are they looking for and how we can push the information to them" (a). Apart from improving the company's image, this shows its willingness and ability to use new technology and also allows it to offer an online decision support system and personalised recommendations, although these are only partly used at this stage. Its main feature is that the company is able to find out what the customers want without having to pay for all the above information.

More Personalised Customer Service

Company A has provided better and more personalised customer service to its customers, "enabling them to easily purchase products as a result of introducing

electronic commerce" (a). If customers have a problem they can get advice over the phone on how to solve it very efficiently. The company gets very good feed-back from its customers and it is not unusual for customers to call in and report that they are satisfied. Furthermore, this is one of the most effective ways to mach the company's site to customers' needs.

Availability of New Intermediaries

Availability of new intermediaries has allowed Company A to overcome problems with inventories. "Since warehouses are not feasible for the company, we now use external couriers such as Australia Post as our new intermediary", says the interviewee.

Allowing Frequently Asked Questions on Web Site

According to the leader of electronic commerce project "Frequently asked questions on Web site is a way of getting closer to our customers. At the same time it is providing the basis for keeping customers with the company and satisfied".

Rapid Delivery

At Company A it is important to be efficient regarding delivery time. "Because of technology advancements, improvements in delivery time are expected from us"(a). This is also reflected by a reduction in inventories and in some cases even gives an advantage over competitors. Nowadays being successful very often depends on being fast.

Appropriate Packaging

The appropriate packaging is definitely important from Company A's point of view. "Sellers should package products so that customers feel they are getting something tangible and aesthetically pleasing, in the way of packaging, which can also make them comfortable with the products" says the interviewee.

4.2.3.4 Future of Electronic Commerce at Company A

Company A is very keen on the idea of engaging further in electronic commerce in the future and definitely wants to run with it. Their projections about involvement in

electronic commerce are made on preconceived ideas and on the basis of "get together, have a bit of discussion and then make the decision". The major factors on which these projections are made include the company objectives, and the level of involvement in electronic commerce of its competitors, partners and customers.

4.3 Company B

4.3.1 Company Profile

Company B is a Melbourne-based consulting company in the field of strategic analysis, project management, procurement systems and operations. The company was established in 1986 and aims to contribute to the improvement of its clients' competitive position, customer service, and profitability. The company sees itself as a resource available to its clients, who need help to analyse particular problems or to conduct specific studies. It provides consulting services in the following areas: architecture, building, computer science, economics, engineering, facilities management, finance, human resources, information technology, law, logistics, and purchasing. This has formed a basis for the provision of independent advice to its clients.

The company delivers its services to leading private and public organisations in Australia, Bahrain, Hong Kong, Indonesia, Japan, Malaysia, New Zealand, the Philippines and Singapore. The company serves the Aged and Health Care Industry, including clients such as Southern Cross Victoria Aged Care, RSL War Veterans, Catholic Homes for the Elderly, Royal Freemasons' Homes of Victoria, Victorian ASSN of Health and Extended Care, etc.

The company has established relationships with industry leaders and leading systems integrators, electronic commerce solution providers, software providers, hardware vendors, and application service providers. It provides its customers with comprehensive, world class electronic commerce solutions and ensures they have access to a completely integrated electronic commerce solution.

4.3.2 Product and Services

The list of the company's offerings online runs to 104 items including office stationery, travel services and software sales. The business support services offered

by the company range from supply chain strategies and systems and technology solutions to various operational aspects of the supply chain.

The company delivers its goods and services through a number of service streams such as: building projects, infrastructure and mining, logistics and supply chain management, organisational change, etc.

Building Projects

Successful building projects start with planning driven by customers' business needs and end with a building that effectively serves the purpose. The company acts for its clients in the creation and delivery of capital projects involving the management of planning, design and construction.

Infrastructure and Mining

In this field the company advises government bodies in the provision of civic infrastructure such as design and construction, alliance contracting and service outsourcing. It also manages consultants, advisers and contractors to ensure that contracts are effectively packaged and implemented.

Technology

With the technology increasingly tied to revenue generation, productivity improvement, security and communications, maximising the use of technology is essential in maintaining a competitive edge. To help its clients to achieve that, Company B provides overall management (strategy, project, business continuity) of business support systems incorporating technology in accordance with clients' business objectives. The company also strives to provide an optimal balance between in-house and outsourced solutions.

Logistics and Supply Chain Management

Company B focuses on three areas of activity in this field. These are: knowledge-shared solutions (strategic supply chain assessment and operational analysis), technology-based solutions (supply chain planning, modelling and realignment using relevant software tools and models) and supply chain management solutions (services such as virtual purchasing and returnable object tracking systems).

Organisational Change

Having in mind that many organizations are facing the challenge of a changing society and economy, Company B helps organisations to deal with issues such as values, cultures, communication, leadership, team work, vision, organisational learning, reputation and strategy.

The Virtual Supply Chain

Company B provides its customers with supply chain solutions. The emphasis is on utilising the latest advances in technology with proven methods to achieve unique solutions. The company allows its customers to outsource all aspects of their purchasing management systems and integrates related services such as: sourcing of products and services, electronic purchasing facilities for client groups or organisations, management reporting against the client's specific needs, supplier optimisation and management, integrated distribution systems, electronic commerce facilities, inventory optimisation, commercial tendering and negotiations, warehousing and distribution, etc. The interviewee from company B was the Electronic Commerce Manager.

4.3.3 Electronic Commerce at Company B

In order to ensure successful adoption of electronic commerce solutions Company B offers its clients the ability to take advantage of the expertise of the following industry leading organisations: Cable and Wireless Optus- Electronic Commerce Infrastructure, ANZ eGate - Electronic Payment Gateway Partner, Posisoft Pty Ltd - Procurement Engine, Ice Blue Pty Ltd / Reactive Media Pty Ltd, Blue Star Office, Internet Travel, Fowles Auction Group and Volante Integrated Technology.

Company B established its electronic commerce in 1997. It includes the marketing, buying and selling aspects of the company's business. The model of electronic commerce the company uses is business-to-business electronic commerce and business-to-consumer. The company uses the Internet technology to support its electronic commerce and at the same time it is looking at technology that will allow it to be platform-independent or protocol-independent. The company also enables client companies to outsource their purchasing departments through its electronic commerce solutions.

The highlights of the benefits, challenges and success factors at company B are presented in Table 4.3.

Table 4.3 Benefits, Challenges and Success Factors Identified at Company B

Benefits	Challenges	Success Factors
Reduced operation costs	Measuring success	Secure transactions
Competitive advantage	Web site issues	Availability of new intermediaries
Consumers loyalty	Acquiring IT skilled people	Online catalogue
Retained and expanded customer base	Employee resistance	Regular update of the content of the web site
	Technology cost	Effective project leader
	Lack of EC infrastructure	Top management support
	Budget	Partnership with service provider
		Partnership with suppliers
		Partnership with technology provider
		Adequate resources

From Table 4.3 it is clear that company B has achieved four benefits, encountered six challenges and identified 10 success factors of electronic commerce.

4.3.3.1 Electronic Commerce Benefits

The biggest benefits company B has achieved as a result of introducing electronic commerce are:

Retained and Expanded Customer Base

Electronic commerce has brought a new way of retaining and expanding the company's customer base. This has been achieved by being able to reach customers at greater distances and better meet their needs. "Since we are a relatively new company, our customer base is still growing rapidly" (b). An important base in Victoria includes 30 organisations with 180 sites. The company is looking at expanding into New South Wales and Queensland.

Reduced Operation Costs

Company B has taken full advantage of its engagement in electronic commerce by reducing its operational costs. According to the interviewee "by less interaction between, for example, the purchasing department and other members of the organization, the costs are significantly reduced". Electronic commerce has also allowed the company to reduce existing overheads, administrative costs and

material expenses. The company's clients are also provided with an opportunity to reduce their costs. Instead of tracking their orders in the traditional way, they are now able to do it online.

Customer Loyalty

Electronic commerce, with its capability to create better relationships with customers, has enabled Company B to foster a culture in which customer loyalty plays an important role. The company is currently working on several ways to develop customer loyalty. "These include developing a system that is responsive to the market and prevents consumers from feeling frustrated, as well as easing communication with customers", says the company's Manager of Electronic Commerce.

Competitive Advantage

One of the major benefits of electronic commerce is the opportunity to create competitive advantage. The company can gain competitive advantage through lower prices than its competition and through making hard-to-find goods available to its customers. "It was particularly achieved in our company through being able to offer low prices on 90% of what we sell and deliver it on time" says the interviewee.

4.3.3.2Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company B were as follows:

Employee Resistance Towards Electronic Commerce

In the process of introducing electronic commerce Company B had to deal with its business partners' employees' resistance towards electronic commerce. "Many of them were not ready to accept this new way of doing business, preferring to stick up with the old paper work than to get the job done over the computer" (b).

Acquiring IT-Skilled People

The company has found itself confronted with this challenge since it decided to engage in electronic commerce. According to the respondent "since the IT-skilled people have been critical to this rapid growing area and due to

anecdotal evidence of the shortage of IT skilled people, finding the right people has been quite difficult, and we have to look at a few areas in order to succeed in this process". These areas were information technology, electronic commerce, commercial management, specialists in fulfilment support, etc.

Web Site Issues

At the beginning of its involvement in electronic commerce Company B outsourced the web site design to an organisation that is a specialist in this area. Unfortunately, that organisation was not able to deliver an appropriate web site design, nor understand the company's electronic commerce model enough to be able to take it up. This issue has therefore been dealt with in-house.

Software Compatibility

With the proliferation of new technologies almost every day, the problem of software incompatibility inevitably arises. Apart from technological reasons for incompatibility to occur, the lack of electronic commerce knowledge among software specialists is another contributing factor. According to the interviewee "the company's experience shows that those specialists often do not understand the company's model enough to be able to build the system around it".

Technology Cost

New technologies that are providing companies with almost endless solutions for improving the conduct of their businesses every day are taking their toll. Company B, like many other companies, is struggling to cope with its cost. "Technology cost is the single most expensive item in the company outside peoples' wages". The way the company is trying to overcome this problem is by developing a good business case and approaching large software companies to partner up with them, offering them a stake in the company in return for the use of their technology.

Lack of Electronic Commerce Infrastructure

The fact that electronic commerce is a fairly new phenomenon is reflected in the lack of an electronic commerce infrastructure at Company B as with the majority of companies who are in this new area of business. This is a challenge because it is something totally new and it is hard to know what the necessary infrastructure for

successful electronic commerce is. According to the Manager of Electronic Commerce "the company sees the lack of electronic commerce infrastructure as a challenge caused by the fact that a vast majority of companies are still at version one of electronic commerce".

Budget

In order to be successful and to take full advantage of electronic commerce, Company B is aware that it requires extensive funds. "Budgeting, in general is a huge issue for any sort of business, and budgeting of the electronic commerce side of business is no exemption to that rule" (b). In many cases in this company, the budget challenge is solved by allocating adequate funds. In others, however, the company develops a business proposal for either an ad hoc partnership or an alliance with its partners to overcome the shortage of available funds.

4.3.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company B:

Top Management Support

Securing top management support for electronic commerce projects is the single most important success factor in this company's view. A project that, in most cases, is not likely to make any income for the next few years is very hard to justify from an investment point of view. "Therefore if there is no understanding of the nature of the business and if there is no top managerial support, there is just no way a company's electronic commerce projects are going to succeed" says the interviewee".

Effective Project Leader

At Company B the role of the project leader is very often regarded as a critical factor for the success of that project. An effective project leader is seen as someone who is capable of delivering sustainable value to the company. "Being a project management company, for us it is very important to have an effective project leader" (b).

Adequate Resources

According to the Manager of Electronic Commerce "in order to get electronic commerce up and running, significant resources have been directed towards that goal at Company B". The company has been able to manage this and resources have been made available for both the new technology and skilled people.

Secure Transactions

The company's goal is to have close to 100% secure transactions as soon as possible. According to the interviewee "this will boost customer confidence, help them to overcome reluctance to participate in electronic commerce and ultimately secure our customer base".

Partnership With Suppliers and Service Providers

Partnerships with suppliers and service providers are very important for this company. "These partnerships are critical because they have profound impact on the way the whole business is conducted and influence customer loyalty, customer base, efficiency, etc" (b). That is why this company does not just bring suppliers and service providers on board, but in many cases is actually locked in a partnership with them.

Online Catalogue

"As an innovative way of selling goods, online catalogues are embraced as one of the best enablers of electronic commerce at our company". Once customers are used to online catalogues, they can create reasonable income for the company and a certain level of customer loyalty as well. Online catalogues represent 25% of company's business. Even though it is still not possible to sell many things through the online catalogue, it is one of the critical success factors for this company.

Availability of New Intermediaries

With the advent of electronic commerce, the proliferation of new intermediaries has become very evident. According to the interviewee "those new intermediaries are positioning themselves as specialists in areas such as new technology and commerce. In order to get skills in the specific areas, such as new technologies, Company B had to employ new intermediaries".

Regular Update of the Content of the Web Site

Apart from the fact that first impressions always matter, and thus the importance of the web site design plays its role, regular update of the content of the web site is the top priority. "The company makes new information about goods and services available to its customers regularly, because failure to do so undermines the whole idea of having a web site" (b).

4.3.3.4 Future of Electronic Commerce at Company B

The company's market projections are to have up to 80% of the aged-care market in Australia as its customers in the near future. It also plans to expand into doctors' surgeries and RSL clubs. It terms of return on investments, the company cannot see itself making a profit out of electronic commerce until 2002. In terms of personnel the company needs new skilled people in the near future to run the business more successfully. The company is looking at gaining many more alliances with its partners in the future, in order to better establish its presence in the market.

4.4 Company C

4.4.1. Company Profile

Company C, a Melbourne-based publishing company is part of a global international organisation whose network reaches millions of people around the world in more than 20 countries. It provides direct access to more international markets than any other classified site and is constantly expanding and growing. The company's headquarters are located in Melbourne, it has offices in Sydney and Brisbane and it is about to open new offices in Adelaide and Perth.

The company is in the publishing and classified advertising business and also provides interactive trading post services through its electronic publishing division. It has built a nationwide network that has supported its nationwide content. That nationwide network of publications allows the company to put its national content data base together, and the network is now driving the company's electronic commerce and distribution and is providing classified advertisements to other Internet sites.

The company's vision is to bring buyers and sellers together with ease, through user-friendly and cutting-edge Internet technologies that get quicker results at lower cost. Furthermore, it connects buyers and sellers within their own local communities, as well as across the globe. Company C presents its commercial clients with a cost-competitive, effective means of positioning and marketing their products or services as a viable option to private sales. Its private buyers and sellers enjoy a range of exclusive options combined with simple procedures that suit anyone from the most technically savvy to the computer beginner.

The company's objectives, with regard to sellers, is to provide them with the ability to:

- Reach as many real and potential customers as possible.
- Distinguish their product.
- Obtain maximum fair returns.

Its objectives with regard to buyers is to provide them with the opportunity for:

- Fast and intuitive methods of locating items.
- Means to cut down on wasted time and travel by providing more certainty about purchases.
- Improved communications with sellers.

Company C sees itself as a place where people come to buy and sell, and it makes an effort to involve its clients directly in that process. Thus the company facilitates its clients' direct participation by being the vehicle for them. The company considers its relationships with customers as one of its most valuable assets. Furthermore, the company's aims are to have a very direct relationship with its customers and to be aware that success depends upon the ability to maintain the customer's trust.

The company tailors its site to the interests of its customers by using their orders to shape the company's recommendations about services (for example, finance and insurance services) and goods (for example, car products). It also monitors customer traffic patterns and site usage in order to develop better design and layout of its site.

4.4.2 Products and Services

Company C primarily offers classified advertising. Its readership achieves about 85,000 sessions a week online. Furthermore, it also offers goods online, such as cycles and golf clubs on behalf of its clients.

The company helps people buy and sell vehicles, boats and a plethora of luxury items online. It hosts live auctions, and helps employers find employees and job-seekers find jobs online. Through its classified advertising over the Internet, the company provides direct access to international markets. It also provides relevant information, special offers, and related products and services. It is constantly expanding and growing to take advantage of the latest technologies and meet the changing needs of the marketplace.

Because the company was not financially capable of going into the auction business as a general auction site, it decided to go online very specifically with antiques collectables, books and art works. Thus its auction site now provides sellers of rare and valuable goods with easier and more profitable ways to sell their items than via the traditional classified ad. The interviewee from company C was the Manager of Electronic Commerce.

4.4.3 Electronic Commerce at Company C

Company C has both electronic and traditional business, its electronic commerce being established in 1998. The marketing and selling aspects of the company's business are electronic. The medium of electronic commerce it uses is the Internet. The model of its business is consumer-to-consumer, but it is also moving into business-to-business and business-to-consumer.

The company's business is almost 90% fully electronic (ie capable of handling e-payments, e-delivery or electronic trading of goods and services). Only a very small percentage of its consumers is utilising this (about 5%), but the company is confident this will improve. In its advertisement placement system the company is now in the third generation and just about to release the fourth generation. With each successive generation useage has improved and increased because it is getting easier for people

to use. The company is spending significantly on making its systems user-friendly and plans to spend even more in the future, because it is still a trial and error system.

The highlights of the benefits, challenges and success factors at company C are presented in Table 4.4.

Table 4.4 Benefits, Challenges and Success Factors Identified at Company C

Benefits	Challenges	Success Factors
Business efficiency	Technology cost	Functional/user-friendly web site
Competitive advantage	Security	Frequently asked questions
Improved image	Lack of EC infrastructure	Payment via credit card
Acquisition of a niche market	Employee resistance	Integrating web site to all business processes
Retained and expanded customer base	Integrating front-end EC to back-end system	Web site listed on critical search engines
	Budget	Top management support
	Current EC legislation	Partnership with technology provider
		Appropriate organisational structure
		Partnership with suppliers
		Appropriate sociotechnocal policy
		Rapid delivery
		Adequate resources
		Excelling in communication with customers
		Advertising online

Table 4.4 shows that company C has achieved five benefits and encountered seven challenges of electronic commerce. The company has also identified 14 success factors of electronic commerce.

4.4.3.1 Electronic Commerce Benefits

The biggest benefits company C has achieved as a result of introducing electronic commerce are:

Business Efficiency

The company has achieved greater business efficiency in some areas of its business. Firstly, it was achieved by reducing manual time, and eliminating this altogether is the company's next step. Secondly, according to the interviewee "it now takes one twelfth of the time to process an ad, compared with the time we needed when we started processing ads electronically". This has all had a huge multiplier effect on

software licences, equipment, buildings and the whole infrastructure. However, this did not happen over night, but has been achieved in gradual steps. The primary reason for this was changing the company's back end system and also the company could not get the integration as quickly as planed.

Retained and Expanded Customer Base

Company C has expanded its customer base by virtue of being on line and opening itself up to new markets. So it has actually added an enormous value to its readership, providing basically anyone advertising with the company with 85,000 viewers a week. According to the company's Manager of Electronic Commerce "being online and being able to offer electronic business solutions in all senses, not just the financial sense, has dramatically expanded the company's customer base". The company's customers have come from different type of business and educational backgrounds.

Acquisition of a Niche Market

The company is developing in a few niches and is very strong in the automotive and auction niches. It has also become the leading provider for the swapping of musical instruments.

Improved Image

The image that the company has gained by being engaged in electronic commerce represents a benefit as well. "It definitely modifies the way people perceive the company". The value of the company, as represented by the share market, is such that at the moment it has an extremely positive effect on the value of any business engaged in electronic commerce.

Competitive Advantage

According to the interviewee "with regard to competitive advantage the company didn't have a problem gaining it, but rather with maintaining it". Company C has had a lot of people trying to take over its market but in its mainstream product, it has actually maintained its competitive advantage and kept a lot of other people out.

4.4.3.2 Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company C were as follows:

Employees Resistance Towards Electronic Commerce

In the initial stage, when no one really understood what was involved, the company had very little employee resistance. "Nowadays, however, because of the money invested in electronic commerce, there is considerably more resistance to what this part of the company is doing and the amount of money it is spending" (c). There is a lot of jealousy and lack of understanding, as well as reluctance to listen to reasons why the company is going into electronic commerce. Sometimes the company is fighting its own people and the competition outside at the same time.

Security

The company had a couple of security holes in the early days, and now it suspects that its business partners and customers are not very confident about security systems in general. Its business partners are worried about fraud and the company has had to spend a bit of time to work through those issues. According to the interviewee, "customers are still reluctant to use credit cards because of a lot of misinformation". However, customers' confidence improved when the company got Westpac's logo on its paper's front page. After that sales went up 50% almost over night.

Technology Cost

According to the Manager of Electronic Commerce "the company's major technology cost is the investment it has made in developing its overall software to a robust enough solution for our sites". That is because the company has to run multiple publications, payment methods, browsing methods and searching methods, which requires very expensive hardware. Thus, the majority of the company's costs are in software.

Lack of Electronic Commerce Infrastructure

Regarding the lack of electronic commerce infrastructure, this company's biggest problem is the lack of quality of some ISP. The company cannot do anything about it

but users blame them. People's own computers, the speed of the modem, and the speed of the network are limitations as well.

Integrating Front end Electronic Commerce to Back End Systems

Integrating front end electronic commerce to back end systems has played a role as well. "It has been costly but is not prohibitively expensive" (c). It is costly for a number of reasons, firstly because the business practices had to be rethought to electronic commerce and the company's entire business had to be rethought and examined to find what could be simplified. Second, the company has a lot of complex business roles with different costs for different advertisements, etc. Thus it was quite expensive to develop the company's Internet technology to meet existing business practices, and there were also expenses in tying systems together.

Budget

Budgeting with electronic commerce is very difficult because traditional models of IT development are getting obsolete, and have been wiped away with the speed of the Internet. "The budgeting has to be calculated with regards to how many people are going to work on the project, what they are trying to achieve, what the company needs to do, what functionality it is going to have, etc" says the interviewee.

Legal Issues

Other challenges Company C is facing relate to the lack of electronic commerce legislation. "Overall clarity is needed in some of the existing Bills over electronic commerce legislation in Australia. Maybe rather than the electronic commerce being legislated as a whole, individual bills need to be introduced. A lot of so-called 'grey areas' need to be regulated" (c).

4.4.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company C:

Top Management Support

Senior management support is absolutely critical to the success of electronic commerce. As management learn more about electronic commerce, the more they

tend to do about it. Finally, it is critical because "if you don't get the funds you'll get nowhere", said the manager in charge of electronic commerce at company C.

Adequate Resources

The most critical factor of all at Company C is adequate resources and that applies to money, human resources, the ability to outsource where appropriate, the ability to have effective hardware, etc. According to the interviewee "the company might have the most effective project leader in the world but if it hasn't got resources it has got nothing".

Appropriate Sociotechnical Policy

An appropriate sociotechnical policy is probably critical to the future of the business. "If the company has got the right team at the beginning it tends not to worry about it, till it grows to such a size that it needs those formal systems in place", says the interviewee.

Appropriate Organisational Structure

The appropriate organisation structure is very organic. According to the interviewee "the company doesn't necessarily need the structure in the first place because it tends to grow first and worry about structure later. And that's fine with small organizations and in initial stages. The structure grows very naturally".

Integrated Front End Electronic Commerce to Back End System

Integrating front end electronic commerce to back end systems is critical, particularly in terms of when it happens. Every company needs to spend quite a bit time and money on it and has to have a long term vision of what it wishes to achieve. However, not all of this has to be in place in the early stages. If the company has human fulfilment in the place it is much easier.

Functional and User-friendly Web Site

For any successful web site the content is the driver, functionality comes second and the web site design comes third. The quality of the content and the frequency of updates are very important. In the early days people changed their web site every 6

months, but today it is done 6 times a day. The company updates some of its sites every hour. Company C is very conscientious about constant updates.

Being Registered on Critical Search Engines

According to the respondent "the company is spending a lot of money paying people to make sure it is registered on critical search engines and constantly in the top ten". This alone costs about $30000 a year. However, in reality most of its customers seem to come through word of mouth, publications or whatever advertising it has done.

Frequently Asked Questions

FAQ's on a web site "takes the users' experience to another level and are important for that reason" (c). However, in this company's experience FAQ's are only one small part of the whole process.

Advertising Online

Advertising online gives the company 7% or 8% of a very defined market. "It really does get good results for the company's clients if it's done the right way", says the interviewee. The company's major advertising campaign was carried out in late January and February 2000 and it doubled the volume of traffic on the site almost overnight. However the company's perception is that their own medium is the most powerful. They also advertise on Radio, TV, magazines, billboards, trains, etc.

Excelling in Communication With Customers

The company is very concerned about communicating effectively with its customers and providing better and more personalised customer service. "For example customers can place an ad any time they want, the company's employees are more available, and there are more frequent updates" (c).

Rapid Delivery

Delivery time is very important nowadays in an instant world, when people expect quick and efficient service, especially from those involved in areas such as electronic commerce.

Partnership With Technology Providers

Partnership with technology providers, according to the Manager of Electronic Commerce "is critical because technology itself has become so specialised and so packaged that we can't find one partner or provider for all our needs, but need a network of them for support". At the beginning the company tried to build the necessary skills and found it was very hard to maintain that skill level in-house.

Partnership With Suppliers

Partnership with suppliers is important. "Any company needs to know who is reliable, and who can deliver on time and at the right cost. It does speed and simplify things if the company has a good relationship with its supplier, especially in areas such as hardware, network, support, etc".

Payment Via Credit Card

Payment via credit card is the key and is very important for the success of electronic commerce at the moment. Other success factors include the company's ability to find a better way to do its business on the web, doing it in a meaningful and proven way, and being visionary and open minded towards new strategies.

4.4.3.4 Future of Electronic Commerce at Company C

As a global entity, Company C has put an enormous amount of money into building the electronic commerce side of the company, and is predicting an increase in revenue every year. However it is still going to be a few years before it makes a profit out of it, and no-one is looking for an instant return. A lot of what the company is doing now is setting itself up for future market share. The range of services and security features will become major issues in the future. The company has made projections about its potential market niches. Its head office in Paris has also made its own projections and employed some of the best consultancy companies in the world to make double checks.

These projections are made on the basis of what the company now knows. It includes measurements of loyalty and its ability to see what type of things users are interested

in. The company has a lot data to build on, and in terms of future projections there are many experts involved in any projections the company does.

4.5 Company D

4.5.1 Company Profile

Company D is a subsidiary of one of the world's largest automotive corporations and full-line vehicle manufacturers. Its parent company partners with over 30,000 supplier companies worldwide, has manufacturing operations in 50 countries and is a global presence in 200 countries, with more than 260 major subsidiaries, joint ventures, and affiliates around the world.

Company D, one of Australia's largest automotive manufacturing facilities was formed in the 1930's. The company's main area of business today is the manufacturing and distribution of motor vehicles, engines, components and parts.

The major areas of this company's operations include design, engineering, vehicle manufacturing, engine manufacturing, sales, marketing, service parts operation, finance and purchasing.

Company D's sales and services operations include Dealer Networks (90 metropolitan, 255 rural outlets), Customer Service, Financial Services and a Customer Assistance Centre. The company produces approximately 128,000 vehicles and 338,000 engines per year, and of that number approximately 23,000 vehicles and 192,000 engines are exported.

Today the company manufactures a range of vehicles and engines to meet Australia's motoring needs into the 21st century. The company's vision is to sustain its production of vehicles that are safer, stronger, more efficient and more "intelligent".

For many years, motor sport has been a major role in the company's heritage. Its experience and success in motor sport are seen as a mobile test bed for the company's road products. Some of the advances in brakes, suspension, aerodynamic technology and safety are achieved as a result of participating in motor sport events around the

country. It is this company's firm belief that its involvement in motor sport is for the ultimate benefit of all Australian car buyers.

Although each division of the parent company conducts most of its own research and engineering projects in-house, a certain percentage of that work is done by the parent company's technical centre at the request of the divisions. Practically the technical centre is the workshop for the parent company's engineers, researchers, stylists, designers, mechanics, machinists, and other specialists, and is seen as its investment in tomorrow.

4.5.2 Products and Services

Company D is one of Australia's foremost exporters of manufactured goods. During its 40 years of export operation, the company has exceeded the expectations of sophisticated automotive markets worldwide. Recently, the all-new VT vehicle has opened up a number of market opportunities, such as in the Middle East and Latin America. In addition to that the new production line will become the principal source of the company's vehicles for the Asia Pacific region.

The company also exports vehicles to New Zealand and the Asia Pacific area, including Brunei, Fiji, Malaysia, and South Africa. Its Family II four-cylinder engines are exported to Egypt, Germany, India, Indonesia, South Africa, South Korea, Taiwan, UK, and USA.

Company D's Engine Operations exports a range of four-cylinder engines to Europe, the United Kingdom, and Asia, as well as supplying other local manufacturers with V6 and V8 engines. The interviewee from company D was the Manager of the IT Department.

4.5.3 Electronic Commerce at Company D

The company has both electronic and traditional business, electronic commerce being established in 1990. The marketing, buying and selling aspects of its business are electronic while the Internet, Intranet and EDI are the media of its electronic commerce. The models of the company's electronic commerce are business-to-business and business-to-consumer. The company still does not sell online but

expects that this may change in the near future. With regard to the business being fully electronic, there is still no capability for it. But there will be a push to basically collapse the supply chain in the future, and provide electronic payment capability to dealers, etc.

The highlights of the benefits, challenges and success factors at company D are presented in Table 4.5.

Table 4.5 Benefits, Challenges and Success Factors Identified at Company D

Benefits	Challenges	Success Factors
Business efficiency	Technology cost	Regular update of the content of the web site
Competitive advantage	Software compatibility	Integrating web site to all business processes
Consumers loyalty	Web site issues	Online catalogue
Retained and expanded customer base	Integrating front-end EC to back-end system	Top management support
Reduced inventories	Budget	Partnership with technology provider
Acquisition of a niche market	Internet service provider reliability	Cross-functional project team
	Current EC legislation	Active role of IT department
		Partnership with service providers
		Appropriate organisational structure
		Forming alliances
		Rapid delivery
		More personalised customer service
		Excelling in communication with customers
		Adequate resources
		Advertising online

According to Table 4.5 Company C has achieved six benefits and encountered seven challenges of electronic commerce. The company has also identified 15 success factors of electronic commerce.

4.5.3.1 Electronic Commerce Benefits

The biggest benefits company D has achieved as a result of introducing electronic commerce are:

Business Efficiency

Business efficiency is the major business benefit provided by electronic commerce. It means that many steps of the supply chain can be collapsed. This is probably not a lot in the short term in the production process, but potentially it will provide even more business efficiency in the future, especially in business-to-business electronic commerce.

Retained and Expanded Customer Base

According to the interviewee, company D "has retained its customer base and is now seeing a lot of people who have no previous position or experience with our brand becoming our customers". This expanded customer base is an example of how the purchase cycle of the vehicle has been increased.

Customer Loyalty

As a result of customer management this company has improved customer loyalty. The principle is that if the customers like the product then there is every chance they will repurchase the product. It is firmly believed at Company D "that loyalty will drive the purchasing process", says the interviewee.

Reduced Inventories

The company sees its reduced inventories as a benefit on the supply side, because through electronic commerce "it has been able to supply its inventories a lot better. It has also been able to manage the supply chain process. On the other hand, reduced operation costs have been achieved through reduced steps in business processes" (d).

Competitive Advantage

Company D has gained competitive advantage through more effective cost management. Competitive advantage, according to the Manager of IT Department "is

to provide customers with what they want, when they want it, and at a competitive price".

Acquisition of a Niche Market

With regard to acquiring a niche market the company is moving towards satisfying the niche price and developing niche products. However, again it is capturing the market that tells the company they are providing what the customer wants.

4.5.3.2 Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company D were as follows:

Web Site Issues

Company D has encountered problems with the web site design. "The company tries to push a global approach that has been developed and hosted in the United States, so it had difficulties in matching local business requirements with the constraints of the parent company" (d).

Software Compatibility

With regards to software compatibility, when the company works as a global company the problem is developing software standards that apply globally. "So it's really about getting common agreement on the process of managing the development, rather than the problem of compatibility or installing the software", says the interviewee.

Internet Service Provider Reliability

The challenge with the Internet service provider relates to the fact that it takes some time for the parent company in the United States to specify the hosting environment. However, this has recently been defined and the company has had no further problems.

Technology Cost

Technology cost is always a problem, and the company wants to minimise this cost as much as possible. The difficulty is that new technology is coming out continuously. The company wants to keep its costs down, but software costs in the United States are a lot higher than in Australia.

Integrating front end electronic commerce to back end systems

Integrating front end electronic commerce to back end systems is what the company is doing at the moment. It has got its business-to-business presence there, which is basically a shopping environment with trade exchange that relies on integration of the back end. According to the interviewee "even though nowadays the company is applying new technology in order to solve this challenge, there is a feeling that this will be its biggest challenge".

Budget

Budgeting could always be a challenge in this company, firstly because there is never enough budget for what it wants to do, and secondly because its budget is developed well in advance of the period in which it is operating. "So finding funds at the moment for some of these new strategies is very difficult" (d). In terms of budgeting in a globally driven process, the biggest problem is cost allocation from the parent company.

Current Electronic Commerce Legislation

The company believes that "the current electronic commerce legislation in Australia is not very strong", says the interviewee. It is very important to have legislation that can, for example, clarify the point at which a contract is confirmed, and at what point the company is legally contracting the business. This situation shows that the law itself has difficulties in dealing with technology which is growing exponentially.

4.5.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company D:

Top Management Support

Because senior managers at company D have conservative views, "they have to be sold on the benefits of electronic commerce as a strategy" (d). On the other hand, it is generally accepted that electronic commerce itself will change business processes through collapsing the supply chain and potentially collapsing the sales cycle. That further means changing the resources structure in terms of what they do. In general, acquiring top management support in the company is not an issue, but they have got to see the benefits of electronic commerce first.

Cross-functional Project Team

According to the Manager of the IT Department at the company "a cross-functional project team, as a means of broadest possible involvement across all disciplines, and cooperation across different departments, is necessary in every company". However, it is important to draw the boundaries, because one department may impinge on another one's territory. It is really important, particularly in a company of this size, that the business itself identifies what approach it wants to take in managing a project like this. Finally, an effective project leader who will coordinate the necessary cooperation, particularly in this sort of project, is also a crucial success factor.

Active Role of IT Department

The role of the IT department is important because businesses must own the process of defining what they want. The IT department has a very important role to play in ensuring that the traditional system of developing the processes is followed, whereas a non-IT-based team would probably treat this as an advertising campaign. It is important, for the policy makers at company D that the company has a separation of powers. "One part of the company is to define the solution and another one is to deliver the solution" says the interviewee.

Adequate Resources

Adequacy of resources is an enormous critical factor. Hence there is probably more of a push to outsource skills, and to get immediate solutions and responses to decrease the company's liability. However, in this case the company does not have access to such skills. "Overall, we do our best to provide enough resources to cover the budget"(d).

Appropriate Organisational Structure

Appropriate organisational structure from company D's point of view is definitely a major success factor. "In decision making the whole structure within the company is important", says the interviewee.

Integrating the Web Site to All Business processes

"The company wants to be seen as the leader in the area of manufacturing cars, but if it doesn't have an integrated web site for all its business processes, this will not be achieved" (d). Furthermore, its web site design is also an important success factor. Company D uses a special agency in the United States that helps with web site issues. A web site has got to be eye-catching, functional and more importantly user-friendly. This is crucial because it is the first impression that counts.

Regular Update of the Content of the Web Site

Updating the content of the Web site, particularly with something as dynamic as the product price, is quite important. In some cases it has to be updated very frequently. However, in other cases such as with company policy, frequent updates are not an issue. Closely linked with this is the importance of having the company's web site on critical search engines. Since every company wants to be on as many search engines as possible, this seems to be quite important for company D.

Online Catalogue

An online catalogue, as a source of information on the organisation's product, can influence company sales and create customer loyalty to a certain degree as well. Furthermore, because sales ultimately create incremental business, an online decision support system and personalised online recommendations, combined with an online catalogue, are important success factors as well.

Advertising in Newspapers

"Advertising in newspapers, as a way of reaching the customers, especially in remote and regional areas, is important for our company", says the interviewee. The company advertises in newspapers and other media quite a lot, and it advertises electronically as well. Now it has product brochures online with recommended vehicle prices.

Rapid Delivery

Delivery time in every business is important and for company D, it is crucial. It can give the company an edge over the competition and take pressure off company inventories. "Customers who buy a car want it as soon as possible, and don't want to wait too long for delivery, so the company has to meet the customers' expectations if it is going to succeed" (d). Appropriate packaging, from this company's point of view, could also be important. To a certain extent, because it delivers spare parts to shops, services and dealers, appropriate packaging can make the difference when it comes to making a decision about whether to make a purchase or not.

Partnership With the Technology and Service Providers

Partnership with the technology and service providers, in terms of business-to-business electronic commerce in this company, is seen as very important. They are absolutely crucial for the company's success because they can support the company's delivery time and help to retain or even expand its customer base. This business-to-business concept would not succeed unless the company had good partnerships with its suppliers. However, unless suppliers are part of this new way of doing business, they will not survive either. Reliable suppliers are very important, and basically reliability and quality are fundamental for success.

More personalised Customer Service

By being able to manage its communications with customers, using enterprise customer management and a traditional mass media approach, the company has provided a better and more personalised customer service", says the interviewee. It has, to a certain extent, helped the company to penetrate some new markets.

Availability of New Intermediaries

Company D is very pleased it was able to employ new intermediaries with whom it had not worked before. These new intermediaries are primarily consultants in the area of site development, who are helping the company to work through this process.

Forming Alliances

The company has formed alliances with similar companies. This represents an important success factor and part of the company's strategy. According to the

Manager of IT Department, "these alliances can, for example, take the form of association with insurance companies or other complementary suppliers in the industry".

4.5.3.4 Future of Electronic Commerce at Company D

The company's projection about electronic commerce is that it will represent a growing part of its total business mix within the next 5 years. It is believed that the share of business that is electronically based, over the next 5 years, will start to increase sharply. The company's projections are made on the basis of consultants' predictions on what the impact of the technology is going to be in the future. The company does not have enough knowledge or understanding of this technology to make an independent assessment itself.

4.6 Company E

4.6.1 Company Profile

Company E is one of Australia's leading retailers with more than 2,000 stores in Australia and New Zealand, with as many as 150,000 employees and annual sales for the year 2000 of $20.5 billion. The company is so well established that it is listed on the stock exchanges of Australia, London, New York and New Zealand.

Company E is a conglomerate of businesses, with over 13,000 suppliers (including general merchandise, service suppliers and groceries) from whom it buys around $17 billion worth of goods and services each year.

The company covers almost the entire retail spectrum, using the company's well-known retail outlets. It has a database of customer shopping behaviour and considerable store traffic, and is capable of fast inexpensive marketing. It has an Electronic Fund Transfer at Point of Sale (EFTPOS), existing delivery infrastructure (including call centres), supplier alliances and the in-store technology which can act as windows for e-commerce development.

4.6.2 Products and Services

Company E offers a wide range of products to its customers including grocery and fresh food; beer, wine, liquor and spirits; an extensive range of skin and hair care

products including cosmetics, fragrances, aromatherapy; home and leisure products including books, music and sport; electrical goods and indoor and outdoor furniture; stationery for businesses, home offices and students; paint, hardware, car care products and tyres; gifts for every occasion and numerous other products.
The services that Company E offers to its customers include access to in-store financial services providing in-store banks and Automatic Teller Machine facilities. Its financial services include the provision of everyday transactional services to its customers, regardless of who they bank with. This includes EFTPOS, deposits, bill payments and balance enquiries. With its extensive store network, customer database and infrastructure support, products and services will in the near future be offered through a number of channels including in-store branches, kiosks, ATM's (including cashless ATM's) and the Internet. The interviewee from company E was the Managing Director.

4.6.3 Electronic Commerce at Company E

In order to achieve greater efficiency and effectiveness, Company E has introduced electronic commerce to its business, expecting thereby to increase information sharing, provide cost effective solutions, and value added services and improve communication, allowing suppliers to share these benefits as well.

To add further capability to the company's electronic commerce, one of its departments specialises in the 'business and corporate retailing' of computer products via a blend of retail shopping, inbound and outbound phone call-centre sales, a mail order catalogue, and online web orders.

The company's Online Internet shopping provides its customers with the ability to fulfil their food requirements via computer and the Internet. As many as 40,000 items can be picked from the company's existing stores over the Internet and delivered to different home addresses. Over 50,000 computer products and official Australian Football League merchandise are also available via the Internet, call-centre or by mail order.

Company E developed its electronic commerce site in March 1999, but has still not fully implemented electronic business (ie capable of handling e-payments, e-

delivery, e-trading of goods and services), because not all the businesses are involved in electronic commerce yet.

Company E uses the Internet, Intranet and EDI as its media of electronic commerce. Business-to-business and business-to-consumer are the company's models of electronic commerce. Some aspects of its business, such as marketing, buying, selling and distribution, are partly electronic, because of the link with web-based businesses and EDI. However, all of those aspects also have parts that are still traditionally conducted.

The highlights of the benefits, challenges and success factors at company are presented in Table 4.6.

Table 4.6 Benefits, Challenges and Success Factors Identified at Company E

Benefits	Challenges	Success Factors
Business efficiency	Integrating front-end EC to back-end system	Secure transactions
Retained and expanded customer base	Measuring success	Functional/user-friendly web site
Reduced inventories	Web site issues	Payment via credit card
Improved image	Managing change	Online catalogue
Competitive advantage	Budget	Effective project leader
Consumers loyalty	Reaching customers in rural and regional areas	Top management support
Enhanced skills of employees		Active role of IT department
		Forming alliances
		Responsiveness and flexibility to the market
		Adequate resources
		Responsiveness and flexibility to new strategies

From Table 4.6 it is interesting to note that company A has achieved seven benefits while encountering six challenges of electronic commerce. The company has also identified 11 success factors of electronic commerce.

4.6.3.1 Electronic Commerce Benefits

The biggest benefits company E has achieved as a result of introducing electronic commerce are:

Business Efficiency

Efficiencies have been achieved at Company E by providing better communication with its suppliers, improvements in delivering of goods, as well as optimal allocation of resources. The company's business-to-consumer side has not yet achieved full business efficiency, but its business-to-business has achieved this significantly. According to the interviewee, "the company's ability to handle all its groceries and general merchandise via one centralised electronic commerce system is the evidence of its business efficiency".

Retained and Expanded Customer Base

Company E is taking advantage of being involved in electronic commerce and in expanding its customer base with a minimal increase in cost. The company's policy is to expand its customer base whenever and wherever there is a chance. However, the key benefit is retaining its customer base and in protecting its market. In order to retain its customer base, despite the knowledge that no one is making a profit out of online shopping for supermarket groceries, the company offers groceries online. "The reason for that lies in the fact that food purchases consume 50% of disposable income in Australia, and that part of it is spent online. Furthermore, if our company is not online, we have a lot to lose, since selling groceries represents 60% of the company's turnover" (e).

Customer Loyalty

Company E, as a leading retailer in the country has gained considerable customer loyalty and is reaping the benefits of this across Australia and New Zealand. the introduction of electronic commerce has made it more determined to continue down this path. According to the respondent, customer loyalty must be maintained in the sense that if the company, as a bricks and mortar brand, does not offer online shopping, it is actually, according to the General Manager, saying to its customers "I am going to disadvantage you by continuing to deal with you by traditional ways, so sorry you can't shop with us on the web".

Reduced Inventories

There is no doubt that a significant reduction of inventories at Company E has been achieved as a result of being engaged in electronic commerce. This benefit has been

achieved particularly in business-to-consumer electronic commerce, where the company has the ability to run virtual inventories. An excellent example is one of this company's businesses that has 50,000 items available on its site for sale. However, only 9,000 of these are in the store, while the other 41,000 are in manufacturers' warehouses.

Improved Image

Electronic commerce has opened up a whole new set of business opportunities and benefits for companies. One of the significant benefits of being engaged in electronic commerce for company E is improved image, which has a twofold benefit. Firstly, it has given the company the ability to attract people to retailing, who otherwise would not have considered retail as attractive. So, according to the interviewee "because Internet retailing is not too bad, there is a perception that, after all, it is not too bad to work for a retailer". Secondly, the company's engagement in electronic commerce shows that the company is capable of being in the field of electronic commerce.

Enhanced Skills of Employees

One of the main benefits that this company has achieved as a result of introducing electronic commerce is enhancing the skills of employees. "Employees have internally achieved the ability to actually build the electronic commerce sites. It has been a revelation for them to realise that the company doesn't have to pay millions of dollars to build reasonable quality information sites" (e). It has two benefits for Company E; first it has saved the company a lot of money; second, it has allowed the company to expand a lot faster than it would have if it had had to spend millions of dollars each time it wanted to put a product on the market.

Competitive Advantage

Company E, as a large organisation with formidable resources, could afford to be engaged in electronic commerce, while many of its competitors could not. "Our competitive advantage, as a result of being engaged in electronic commerce, has been achieved by getting to market early and capturing some market share ahead of the competition" says the interviewee.

4.6.3.2 Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company E were as follows:

Budget

Budget has not been a problem for the company because Company E has plentiful resources. However, according to the General manager of the company "planning a budget is very difficult because it is done in advance". The company usually puts its budget together using a lot of marketing skills such as working out what percentage of the population will shop remotely, what an average order might be, the frequency of people's buying habits, etc. In this way, it is possible to come up with a reasonably good budget. Nevertheless, in this time of fierce competition and ever-changing technology, budgeting for some of the projects can be a real challenge.

Measuring Success

Measuring success is very hard in any business, and to make it work with something relatively new is even more difficult. Measuring the success of online business was done first of all by measuring increases in sales. Secondly, according to the interviewee, "delivering a budget without a loss and not blowing it, is considered as a success nowadays". Nevertheless, making a profit is going to be the major measure of success down the road.

Managing the Change

Managing change is very easy within small groups or small organisational forms. However, in a conglomerate of businesses such as Company E, the hardest part is the readiness of the parent company to accept the change. "Our experience is that probably the most difficult thing has been for the parent company to understand the benefit of the proposed change" (e). Sometimes it is very difficult to make the parent company understand that if the company is not selling through this new channel somebody else will capture this share of the market. And more importantly, if the company is not engaged in electronic commerce, it is denying its customers the right to shop through this channel with brands they have trusted for 50 or 100 years.

Web Site Issues

The company's position, with regard to web site issues, is that it is on a learning curve. "One of the issues that has probably surprised many of us is the amount of the time the company needs to devote to the maintenance of the site", says the interviewee. The web site is maintained daily, and to make sure it is done properly, the management team frequently checks the processes to ensure the web site is up to date and as user-friendly as possible.

Integrating Front-end E-commerce to Back-end System

In order to be more efficient, the company has decided to integrate front-end electronic commerce to back-end systems, but the integration has proved to be very difficult. It has been, from this company's point of view, one of the foremost challenges Company E has encountered since it engaged in electronic commerce. "Integrating front-end e-commerce to back-end system is time-consuming, requires very skilled people and represents the company's single biggest cost" (e).

Reaching Customers in Rural and Regional Areas

The problem of reaching customers in rural and regional areas generally depends on the type and the nature of the business. For businesses that are already set up nationally, the problem of reaching customers does not exist, while for others it is an issue. "Some of our businesses have no problems with regard to this issue, but with supermarkets the problem of reaching customers in rural and regional areas is significant because of the refrigerated cold chain delivery required for selling groceries and perishables", says the interviewee.

4.6.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company E:

Adequate Resources

At Company E, adequate resources (finance and people) are always available and as one of the influential factors for the success of any project, they certainly influence the success of electronic commerce at this company. "With that kind of availability of resources, the company is able to undertake any project without hesitation" (e).

Top Management Support

Electronic commerce at Company E has 100% support at both board and CEO level,. The top management supports all the proposed projects that can be justified from the business point of view. "This is a success factor because a general awareness that the project has the total confidence and support of the top management boosts the confidence of employees, allowing them to give their best without worrying what would happen if an honest mistake was made", says the interviewee. This approach has been very successful so far. Several projects were given the go-ahead, many of which have now been acknowledged as real successes.

Own IT Department

Company E has the policy that it is better and cheaper to have full control over supporting its electronic commerce, rather than outsourcing it to someone else. The company has its own IT department with two divisions - IT Support and IT Development. The IT Support division looks after all infrastructure issues and the IT Development division is involved with developing concepts. So far, having those two divisions has not been a draw-back. According to the interviewee "having your own IT department or not, is a question of basically doing the job of supporting electronic commerce in-house or outsourcing it". However, with the web site design, for example, the company sometimes goes outside and seeks advice from a web development company.

Effective Project Leader

An effective project leader is very critical for the success of electronic commerce at Company E. Indeed the respondent suggested that the company probably would not be where it is now without its current project leader, the company's Managing Director. According to the interviewee "the project leader was enough of a visionary a couple of years ago to undertake steps towards engaging the company in electronic commerce. With different people at those times the company might be in a different position today".

Responsiveness and Flexibility Towards New Strategies

Responsiveness and flexibility towards new strategies is one of the success factors of electronic commerce at this company. They have always shown a willingness to

try and change, and to look at something different. "In order to encourage people to be pro-active in this area, we have adopted the policy that being responsive and flexible towards new strategies is a necessity today" (e). Secondly, there is no pressure if something goes wrong, as long as it can be logically justifiable. The company has adopted this approach because there is still no right way of doing many things in electronic commerce. The only right way is if something has been proved as the right way to do it.

Responsiveness and Flexibility to the Market

In today's world, when it is important to be in the right place at the right time, being responsive and flexible to the market is a proven success factor for electronic commerce. "Sometimes being responsive and flexible to market demands can make it or break it" (e). Responsiveness and flexibility to the market, for Company E, goes back to the point where the company feels sometimes it is too fast and sometimes too slow to the market. One of the advantages this company has, according to the company's General Manager, is that everyone is willing to accept and understand that "you don't criticise people if they make the wrong decisions for the right reasons and learn from that mistake".

Forming Alliances

In the campaign to achieve success in electronic commerce, forming alliances is becoming more and more of an influential factor at Company E. Web and electronic commerce have made it possible for this company to form alliances, which never would have happened 10 years ago. "These alliances have helped to overcome and solve many problems such as those with software compatibility, web site issues, etc." (e). The company forged its first major alliance with Yahoo sometime ago, and it has also formed alliances on an ongoing basis, such as the one with Microsoft and others. However, these alliances are probably more with software than hardware companies.

Secure Transactions

As one of the pillars of electronic commerce, secure transactions represent one of the high-ranking factors for success at Company E. According to the respondent, a vast majority of the company's customers were ready to give their credit card numbers even though it was the first time many of them had bought online. That shows that

secure transactions have a lot to do with the trust consumers have in the company. In the event that something goes wrong, customers know where to go. However, with other problems linked to secure transactions, such as the problem of intercepting the data online, Company E is doing everything it can to protect its customers with appropriate security measures.

Functional and User-friendly Web Site

A functional and user-friendly web site, "because it is the interface with the customer" (e), is a key area for this company to focus on in order to get customers online and to contribute to the success of electronic commerce. The web site must be able to communicate with customers as functionally and easily as possible. On the other hand, in order to be attractive to potential customers, it also has to ensure that they can get what they want online.

Online Catalogue

Online catalogues, which provide customers with the opportunity to buy from as many suppliers and and to buy as many brands as possible in one place, are vital contributing factors to the success of electronic commerce. Being a large retailer with so many suppliers and its own brands, Company E sees online catalogues as absolutely critical to the advancement of its electronic commerce. "Its wide acceptability at the company lies in the fact that online catalogues always fulfill a selling function", says the interviewee.

Payment Via Credit Card

Electronic commerce has been greatly supported by credit card payments and their wide acceptability. "Payment via credit card is very convenient for both sellers and buyers and, from our point of view, is one of the biggest factors that assists the progress of its electronic commerce" (e). Company E has, however, gone a step further in facilitating this new trend in trading, by introducing payment through mobile EFTPOS at the door, so its customers are also able to make a purchase without a credit card.

4.6.3.4 Future of Electronic Commerce at Company E

Electronic commerce, although attractive, is just another channel for Company E, and it will never be the only one. The company is convinced that there will always be bricks and mortar stores, there will always be mail order catalogues, there will always be telephone selling and there will always be Internet selling. The company's experience also shows that for many people, shopping is very much a social interaction, not just the exchange of money and goods.

One of the dilemmas in regard to the future of electronic commerce at Company E is determining what the delivery channel of goods and services in future electronic commerce will be. Large households around Australia, in the Company's prediction, will have some sort of large pipeline before the next major change happens in this area. It will be Internet-based but whether it is going to be via cable rather than via copper wire, the company is not sure. In the meantime the company plans to take advantage of its large data base and to create online personalised offers based on purchase history. There is a belief within the company that this could be the biggest electronic commerce success factor of them all.

The management team foresees that in 2 years the company will have virtually every business online.

4.7 Company F

4.7.1 Company Profile

Company F was formed in 1987 from six separate companies that had operated in each of the Australian state capitals for a century and more. The company provides four markets: for equities, derivatives on equities and other financial instruments, interest-rate products, and capital-raising for unlisted companies (the Enterprise Market).

Company F realised very early that the future of stock exchanges lay in automated markets rather than trading floors, and developed its own computer-based trading system, which was phased in from 1987. Automated clearing and settlement followed in 1994. Finally, in 1997-98, options trading was also computerised and the trading floor closed. The Enterprise Market is both automated and Internet-based.

Over these 12 years, Company F has developed its skill base in computer and communication technologies. Its equities trading and clearing systems are acknowledged to be among the best in the world. Company F and Nasdaq will promote co-listings and work with investment banks to develop the market in dual-listed stocks. The company will also list the Nasdaq 100 Tracking Index stock, comprising a basket of leading Nasdaq stocks, which will enable Australians to invest directly in this dominant high-technology market.

International stockbrokers and financial network providers such as Reuters, Bridge and Bloomberg are substantially increasing their use of the open trading technology that Company F provides to deliver automated order-routing from investors to the Australian market. There is also an initiative to provide this access to overseas users of the information screens of participating financial network providers

Domestically, two major initiatives affecting the equities market were the introduction of third-party clearing and a proposal for a new trading environment for large block orders. Third-party clearing enables participants in the market, for the first time, to specialise exclusively as either traders or clearers. This is expected to broaden market participation and is designed to provide block traders with greater choice and flexibility, particularly with respect to access, anonymity, order disclosure, execution and trade reporting, without adverse effects on other investors' trading.

4.7.2 Products and Services

Company F provides the following four markets:

The equities market, as a place for trading shares (part ownership of companies) is experiencing record levels, with the number of equities transactions rising constantly, reaching almost five times more than at the start of the decade. The largest floats at Company F in this period were Cable & Wireless Optus, Coca Cola Beverages and Commonwealth Property Office Fund.

An innovation that broadened participation in the market and provided more efficient

intermediation and improved risk management was the introduction of third-party clearing. With third-party clearing, traders require less capital to operate, and can focus on serving clients; clearers can leverage their investment in settlement technology and their balance sheets to create a new income stream.

Company F trades derivatives based on stocks quoted on the equities market, Australian and overseas indices and currencies. Warrants are also traded and settled on the equities market, but all others are traded on a separate automated options market. Growth in the derivatives market has been boosted by the market's change from floor trading to electronic trading. It has attracted significant international participants such as Optiva and AOT from Amsterdam and Timber Hill and Susquehanna from Chicago.

Warrants are also popular among traders, especially since the new types of warrant were introduced. These are capped call warrants (with a low exercise price and a limit on upside potential); call and put warrants over currencies; barrier index warrants (which expire if the index reaches a specified level); and premium income equity warrants (known as PIEs, a variety of capped warrant where the holder is entitled to dividends and franking credits on the underlying shares plus a specified premium).

The Interest Rate Market gives investors the ability to buy and sell bonds in the same way as they trade shares. Before the introduction of this market, it was difficult for investors to buy and sell bonds issued by companies, and to determine the interest rates and returns that they should be receiving. Often investors could only buy the bonds directly from the companies issuing them. Interest rate investments can be used for a number of different and concurrent reasons, including to stabilise a portfolio or to reduce its overall risk. In the short term, they can also be useful in helping preserve the value of investors' capital while they wait for new investment opportunities.

Company F provides details of four different classes of interest rate securities: Commonwealth Government securities, semi government securities, corporate bonds and other debt securities. Securities in the first three classes are shown on both a

price and a yield basis, along with other relevant data. In the fourth class, which includes floating rate notes, convertible notes and other structured debt products whose yield does not have a simple relationship to price, only prices are displayed.

For the first time in many years, retail investors have at their disposal a convenient and economical way to diversify into liquid fixed-interest securities, with a substantial choice of investments having varying yields and maturities, the same continuous disclosure requirements as the equities market, and efficient trading and settlement.

The Enterprise Market is an Internet-based service to facilitate capital-raising for unlisted companies, particularly small and medium-sized enterprises, by providing a forum within which counterparts can be located, negotiations conducted and transactions made.

Companies seeking to raise capital provide information such as accounts, business plans and management structures, while investors provide their criteria for investment and are automatically advised whenever a new entry appears to meet these criteria. The interviewee from Company A was the Manager of Business-to-business electronic commerce

4.7.3 Electronic Commerce at Company F

Company F started using electronic commerce in 1998. Its business is 90% electronic (capable of handling e-payments, e-delivery, e-trading of goods and services). The company is using the Internet, Intranet and Extranet as its media of electronic commerce, while business-to-business, business-to-consumer and within the business are the models of its electronic commerce. Marketing, buying, selling and distribution are electronic aspects of the company's business, and electronic commerce pervades all aspects of the company's business and operation.

The highlights of the benefits, challenges and success factors at company F are presented in Table 4.7.

Table 4.7 Benefits, Challenges and Success Factors Identified at Company F

Benefits	Challenges	Success Factors
Business efficiency	Integrating front-end EC to back-end system	Secure transactions
Increased automation of processes	Lack of EC infrastructure	The use of new technology
Retained and expanded customer base	Security	Functional/user-friendly web site
Extended application of new technology	Measuring success	Frequently asked questions
Reduced operation costs	Web site issues	Providing online decision support system
Acquisition of a niche market	Lack of EC knowledge	Effective project leader
Competitive advantage	Managing change	Top management support
Secure EC environment	Acquiring IT skilled people	Partnership with technology provider
	Budget	Active role of IT department
	Reliable technology vendor	Partnership with service providers
	Internet service provider reliability	Appropriate organisational structure
		Rapid delivery
		More personalised customer service
		Responsiveness and flexibility to the market
		Adequate resources
		Being visionary
		Advertising in newspapers, magazines, Radio, TV, etc.

From Table 4.7 it is clear that company F has achieved eight benefits, encountered 11 challenges and identified 17 success factors of electronic commerce.

4.7.3.1 Electronic Commerce Benefits

The biggest benefits Company F has achieved as a result of introducing electronic commerce are:

Business Efficiency

By introducing a number of initiatives that improve numerous workload processes within the company and dealings with customers, considerable business efficiency is achieved. For instance, "in distribution of purchased material the company has realised a million dollars cost savings doing it over the Internet nowadays" (f).

Retaining and Expanding Customer Base

According to the Manager of Business-to-Business Electronic Commerce at company F, "the company has got to adopt a strategy that gives its customers more service, hence retaining them". Furthermore, it also gives the company an opportunity to expand its customer base because it has a wider distribution mechanism.

Acquisition of a Niche Market

Acquisition of a niche market is another benefit achieved at this company. The company has acquired a registry, as a niche market, which is now 40% of the registry business in Australia. It is also looking into acquiring other small electronic commerce companies.

Reduced Operation Costs

Company F has reduced its operation costs by a couple of million dollars through electronic commerce. One of the company's Extranet sites has increased sales dramatically. The company has achieved retail customer loyalty, because of brand loyalty.

Secure Electronic Commerce Environment

A secure electronic commerce environment is very beneficial "because the company has to be seen as a secure electronic commerce environment", says the interviewee. The reason for that is that the company deals with people's money, so it is a high priority, and relates to the company's integrity and reliability.

Extended Application of New Technology

The extended application of new technology is a benefit because it gives the company the opportunity to go into new business models. It also enhances the skills of employees, as it encourages people to move around in the work environment.

Increased Automation of Processes

Increased automation of processes is one of the company's bigger gains. Company F is now focusing on its legacy system to push electronic commerce further and deeper into the stock exchange and improve work flow.

Competitive Advantage

Electronic commerce by itself has raised the required level of entry into the market place, hence making entry harder. "That factor alone, although we do not have that much competition in Australia, has in a sense generated competitive advantage for the us" (f). Electronic commerce has also improved the image of the company, and it has enabled the sharing of knowledge, and therefore better knowledge management, both internally and externally.

4.7.3.2 Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company F were as follows:

Budget

The budget is a challenge because of return on investment from business cases. According to the respondent "very often it is impossible to justify budget". However, the company treats the budget as a strategic matter which does not necessarily follow normal business guidelines.

Measuring Success

According to the Manager of Business-to-Business Electronic commerce "because of the fact that not all legacy management measures apply to electronic commerce, it is very difficult to measure success in this area".

Managing Change

Managing change is a great problem from two angles. "From the technology perspective, the technology is always changing so the company has to keep up to date with the latest products, software and standards. From the business perspective there is constant change in business requirements because the environment is very dynamic", says the interviewee. Therefore, the company has to balance the constant upgrade of all applications and get them into production.

Security

Security is a challenge because the company "is a highly attractive site for hacking" (f) and the employees of the company cannot just sit and watch hackers trying to get into their system. Because of the nature of its business, Company F is very pro-active in security measures.

Web Site Issues

The company is engaged in the ongoing maintenance of the web site, keeping the data up to date, and decisions on data ownership (who owns the information that is on the web site), etc.

Integrating Front-end Electronic Commerce to Back-end System

Integrating front-end electronic commerce to back-end systems is a challenge, but this company has not had too many problems in getting systems out. It has got interfaces into all of its back end systems. What the company did was to change its architecture to make it even easier. Thus the front end system and all the legacy systems are very clearly connected.

Lack of Electronic Commerce Knowledge

Lack of electronic commerce knowledge is a problem because it is an area that is changing all the time. However, at Company F they are confident that its "people have basic knowledge, so the knowledge itself can be built up to the required level", says the interviewee.

Acquiring IT Skilled People

Acquiring IT-skilled people is the biggest problem Company F faces. "Skilled people are very hard to come by and are very expensive" (f). Hence, the company has developed a policy to get around this by recruiting graduates and developing staff.

Reliable Technology Vendor

From Company F's point of view, technology vendors present two levels of problems. The first level concerns the company's base infrastructure, hardware and software. Typically, however, there are no problems if the company goes with one of the older players with a lot of experience. At the second level the company has

problems when it needs to develop a web site because 90% of those providers do not yet have the required skills.

Reliable Internet Service Provider

A reliable Internet service provider is not a problem for this company because it has established good relationships with the big players like Telstra, Optus and Worldcom. However, it still has problems with the network because, in the company's view, the Internet is inherently unreliable.

4.7.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company F:

Adequate Resources

Adequate resources (finance and people) are very critical. Every company has to have people to do the work and there is always more work. The same thing applies to finance, where it has to have the infrastructure in place.

Top Management Support

Top management support is very critical, because "managers make priorities and decisions about money and people"(f).

Appropriate Organizational Structure

In the electronic commerce arena Company F has just gone through a second corporate restructure to align itself more with its customers. That is why an appropriate organisational structure is so important. "It is all about the company being customer-focused", says the interviewee.

Own IT Department

The IT department at Company F has to help businesses at all times and be pro-active. This is facilitated by having a cross-functional project team as this gets all the business involved together to push electronic commerce throughout the business.

Effective Project Leader

An effective project leader is very critical in the time to market. "In today's environment, when companies are under more and more time restraints, each company has to have a project manager who can get the project in on time" (f).

Being Visionary

Being visionary is important for every company, so the management team has to see and recognise future possibilities and future threats.

Responsiveness and Flexibility to the Market

Responsiveness and flexibility to the market and towards new strategies is critical because business models and technologies are changing rapidly. The company has to be in a position to change its business models and underlying technologies very quickly. On the other hand, the markets change as well, and any new technology will mean that the company may be overtaken by its competitors.

Partnerships With Technology Providers

Partnerships with technology providers, service providers and suppliers are important because those are the areas where the company needs a lot of support. It needs support from anyone it deals with.

The Use of New Technology

The use of new technology, as a success factor is important because it is the enabling factor for new business opportunities. "If the company doesn't take up new technology, someone else might and it may lose business opportunities. However, it comes at a cost", says the interviewee.

Secure Transactions

Recently Company F recorded probably the biggest single internet trade – a deal of a hundred million dollars. Thus it is very important that it has highly secure transactions. Ultimately, it is all about the risk and related costs for the company.

Functional and User-friendly Web Site

A functional and user-friendly web site depends on what the company's market is. For this company and its market, "it has to be functional and add value to the users, to make them come back" (f). However, if the information is not updated people will not come back either. Company F's web site is one of the highest hit web sites in Australia and as it is about stock prices, it has to be updated almost every second.

Online Decision Support System

In this company's business-to-business dealings, there is an online decision support system with its interest rate calculators. It gives people an understanding of what is in the market and what to do. There is a large variety of calculations for derivatives, options, debt markets, etc. They are proudly called the company's analyst tools online.

Allowing FAQ's on web site

Allowing FAQ's on the web site reduces the cost of the calls the company gets. At the same time "it gives the people on the other end an opportunity to have their questions answered very quickly" (f).

Advertising in Newspapers, Magazines, Radio, TV,

Advertising in newspapers, magazines, Radio, TV, etc. is possibly a more effective way to get people to the web site than advertising online because it is more focused. For example, people pick up a particular magazine because they are interested in it, and when they browse through the advertisement they see the web address.

More Personalized Customer Service

According to the interviewee, "company F is trying to get down to personalising every one of its retail and business customers". This is how highly personalised customer service is being introduced to the company. The same goes for excelling in customer communication because this improves customers' experiences and keeps them with the company.

4.7.3.4 Future of Electronic Commerce at Company F

The company's belief is that electronic commerce is going to change the world in many ways. The way financial institutions and stock exchanges work is going to change totally, and people are going to deal with market places differently as well. The fundamental business models for all market places (including financial markets) are going to change, and in 5 to 10 years there will be a whole new business model. This will provide great opportunities but also the risk of losing business. This company is very focused on trying to foresee where the market is going, and leading the way.

With regard to the future direction of electronic commerce at Company F, there is an executive division for strategic planning that looks at what is happening in financial markets worldwide and in technology globally. There is also an executive council that discusses priorities and which projects to push and what to do. Finally, there is an electronic commerce committee, comprising all the senior executives, to suggest the direction in which electronic commerce should be going.

4.8 Company G

4.8.1 Company Profile

Company G is a multinational manufacturing and retailing concern which was founded in the 1880's. In 1893, the company opened a Branch Office and Factory in Melbourne, Australia, and in 1899 it was floated as an Australian company, with a capital of 170, 000 pounds ($A 340, 000). The Legal Entity as we know it today was reconstituted in Victoria in 1920, and since then has been the ultimate Parent Company of the Group. In 1986, the Company changed its name reflecting its increasing stature as an Australian and International manufacturing and marketing enterprise.

In the same year Company G entered into a joint venture with another company to combine all their Australian, New Zealand and Papua-New Guinea manufacturing, marketing and retailing operations.

In 1988 Company G entered into a joint venture with one of Japan's leading battery manufacturers for the manufacturing and selling of batteries to the American automotive and industrial original equipment and replacement markets. In 1989 the company acquired the world's largest producer and distributor of industrial gloves, and the premium technology in hearing aids.

Today it is a company with 151 manufacturing facilities, 1300 retail outlets and about 40,000 employees worldwide. Apart from its various operations in Australia, the company has installations and/or offices in China, Japan, Hong Kong, Thailand, Malaysia, Sri Lanka, New Zealand, North America, and the European Economic Community.

4.8.2 Products and Services

Company G has five major businesses.

The first major business's core competencies are advanced technology low-cost thin barrier protection in natural and synthetic latex, global-branded marketing and distribution. It manufactures industrial gloves, medical gloves and consumer products including household gloves and condoms in Australia, the Asia Pacific region, and the United States, and markets these products in Europe. Over 95% of sales are outside Australia.

The second major business's core competencies are brands, marketing and logistics. It makes clothing, footwear, sporting goods, bedding and foam products.

The third major business's core competencies are manufacturing, marketing and distribution of tyres. It makes tyres for passenger vehicles, light trucks and trucks and for agricultural and industrial purposes. It employs just over 6,000 people and has strong market positions in Australia and New Zealand.

The fourth major business's core competencies are product sourcing and distribution logistics. It distributes electrical and automotive products in retail and wholesale channels, employing nearly 6,000 people in Australia and New Zealand, and has solid market position in its two categories, automotive and electrical.

The fifth major business's core competencies are sealed lead acid battery technology and lead recycling. It makes lead acid automotive and industrial batteries. More than 85 per cent of its sales are outside Australia. The interviewee from company G was the Head of the Electronic Business Unit.

4.8.3 Electronic Commerce at Company G

Company G started using electronic commerce ten years ago with the advent of point to point EDI. Its business is not fully electronic (ie capable of handling e-payments, e-delivery, e-trading of goods and services). The Internet, Intranet and EDI are the media of electronic commerce used by the company. Business-to-business, within the business and business to consumer are the models of its electronic commerce. The company has a huge market. Parts of the marketing, buying, selling and distribution aspects of its businesses are electronic but they are not fully automated processes linked with the web.

The highlights of the benefits, challenges and success factors at company G are presented in Table 4.8.

Table 4.8 Benefits, Challenges and Success Factors Identified at Company G

Benefits	Challenges	Success Factors
Enhancing skills of employees	Security	Secure transactions
Competitive advantage	Measuring success	Top management support
Consumers loyalty	Web site issues	Functional/user-friendly web site
	Software compatibility	Online personalised recommendations
	Reaching customers in rural and regional areas	Regular update of the content of the web site
	Managing change	Cross-functional project team
	Budget	Rapid delivery
	Reliable technology vendor	More personalised customer service
	Lack of EC knowledge	Excelling in communication with customers
		Adequate resources
		Being visionary
		Advertising in newspapers, magazines, Radio, TV, etc.

From Table 4.8 it is interesting to note that company G has achieved only three benefits of electronic commerce. However, the company has encountered nine challenges and identified 12 success factors of electronic commerce.

4.8.3.1 Electronic Commerce Benefits

The biggest benefits company G has achieved as a result of introducing electronic commerce are:

Customer Loyalty

Company G has, to a certain extent, achieved customer loyalty. The company has developed major programs that are going to address the customer loyalty issue and will try to lock in a higher degree of customer loyalty. However, because of the highly sensitive nature of this topic, it is not prepared to elaborate further.

Enhancing Skills of Employees

The company's employees have enhanced skills because of the introduction of electronic commerce. According to the Head of the Electronic Business Unit at company G "people who look after the company's legacy system or marketing are given a chance to acquire skills which they didn't have before".

Competitive Advantage

Company G has 35 web sites, many more than some of its competitors. Potentially, this could represent a competitive advantage for the company, but because the company still cannot trade from its web site, it is not clear whether it does or not. It is probable that it has not made a big difference yet, but there is a belief that it will. On the other hand, however, electronic commerce might have improved the company's image. The main reason for that might be customers' perceptions of the company as more cutting edge than its competitors.

4.8.3.2 Electronic Commerce Challenges

The most encountered challenges of electronic commerce at Company G were as follows:

Budget

This company's philosophy with regard to budget is that from any expenditure on electronic commerce there ought to be a pay-back. For all the money it has committed thus far, it has had to demonstrate pay-back in terms of improving

processes, growing the existing customer base or expanding into new customer bases.

Measuring Success

Measuring success is quite new to the business. Up to now success has been measured in traditional ways, such as changes in cost base, productivity improvements or additional sales.

Managing Change

According to the interviewee, "managing change can be quite difficult in general, and it is probably even more difficult for Company G because it is a conglomerate of businesses". It is very much a loose federation of whole businesses, and the introduction of electronic commerce is one of the first horizontal activities to go across the whole customer base.

Security

Security is incredibly important, and although the company cannot say exactly what it does and how, it is very reassuring that security is a high priority both for customers and the company.

Web Site Issues

Company G has around 35 web sites and they need to be more interactive and updated. "There needs to be greater education into company's legacy system, and a recognition what is required from a commercial web site to make it a place where it is possible to have the sort of hold which gets return visits, and people to spend money" (g).

Software Compatibility

There are problems with software compatibility. The company has 15 different systems and one of its major challenges is to bring them together under one common tool key and to make sure that each of the business units uses standardised software.

Lack of Electronic Commerce Knowledge

There is a lack of electronic commerce knowledge, and a variety of understandings of what electronic commerce actually is. This is why a series of workshops have been held to try to give people a common understanding of the terminology, what the company is doing in electronic commerce and why it is embracing that technology.

Reliability of Technology Provider

The company has a lot of technology providers, and one of its goals is to consolidate them into just one or two. Once it has achieved that consolidation it will be possible to say whether or not they are reliable.

Reaching Customers in Regional and Rural Areas

The company's strategic plan is to reach customers in regional and rural areas, and to do this a fully operational web site is necessary. At the moment the company has only business-to-business relationships, which are with its intermediaries. However, it is working on being able to reach its customers directly.

4.8.3.3 Electronic Commerce Success Factors

The following electronic commerce success factors contributed the most to Company G:

Adequate Resources

According to the interviewee, "it is very important to understand that if the company cannot access resources at the time when it needs them, they are worthless". Therefore adequate resources, that can be accessed for a quick fix, are of the utmost importance.

Top Management Support

Top management support, especially when the company is a conglomerate, is very important. An electronic commerce unit works and commits itself only if it has the support of senior managers. If that support doers not exist, then it simply cannot work.

Cross-functional project team and effective project leader

In a company like this, it is important to have cross-functional project teams in order to get input from different parts of the company. However, the role of the project leader is critical. If there are a lot of activities heading in different directions than success is unlikely. An effective project leader makes sure that it is possible to run a series of parallel projects and not have problems bringing them together when necessary.

Being Visionary

Being visionary is critical. No company can afford not to be. There is a need for a strong vision of whatever the company sets out to do with the resources it has, "because if there is no vision, when the time comes, the company's competition might be there and it might be out of business", says the interviewee.

Secure Transactions

From the customers' perspective, obviously with good reason, secure transactions are very important. So "every company has to make sure that its customers are reassured that the transaction is secured. It is a fundamental cornerstone in electronic commerce" (g).

Functional and User-friendly Web Site

A functional and user-friendly web site is very critical. People will not come back if a site is not user-friendly, and will still use the phone. For Company G this means that it still has to maintain all its customer services over the phone, and consequently, its expected savings from electronic commerce have not yet been realised.

Regular Update of the Content of the Web Site

Regular update of the content of the web site is also critical because "the web site must be fresh and relevant, and content needs to be refreshed daily, or even hourly" (g).

Online Personalised Recommendations

Online personalised recommendations represent one of the real powers of the web. According to the interviewee, "it's almost like putting a display in a store where the company tries to focus people's attention on new things".

Advertising in Newspapers, Magazines, Radio, TV

It is a fundamental belief at Company G, with regard to advertising in newspapers, magazines, Radio, TV, etc., "that every single piece of communication which this company makes with its customers needs at least to mention the web presence". It needs to mention the web address in all forms because it is as an important part of doing business as having the phone number there. It will not have the same impact as a phone number but making sure that every piece of correspondence that goes out includes web addresses is a good discipline. If, however, the company is going to advertise its electronic commerce in its own right then it is going to be a part of a far greater strategy.

Rapid Delivery

Rapid delivery, according to the respondent, "is going to be more and more critical as logistic companies become better and better, and as warehouses of wholesale goods also become better as well". Finally, customers' expectations will eventually grow. Furthermore, the product must arrive to customers in a saleable state. It must not arrive damaged, so it has to be packaged appropriately.

More Personalized Customer Service

There is a high correlation between sales and personalised customer service. "There is a real need nowadays to understand who are the company's customers and what they want, so that it can personalise its message to them".

Excelling in Communication With Customers

According to the interviewee, "it is most important that when dealing with customers in electronic commerce, the company deals with them as it would have or should have in its normal business". For example. if delivery is going to be late they need to know. A good idea is to develop a system which advises (e-mails) the customer as quickly as possible of any developments or problems.

4.8.3.4 Future of Electronic Commerce at Company G

Company G's general projection is that electronic business will become 'the' business. The "e" will move from the outside of the business, back inside the business, within the space of 5 to 7 years. People will, in the short to medium term, drop the "e" and everything will just be business. There are going to be winners and losers from this. There will be changes in the way the company deals with customer. There will be new intermediaries. All this will be driven by the need to acquire a bigger share of the market. However, what will actually happen is that all businesses will make the move. "The freeways will be built and the big department stores will be on the side of the road in prime locations and they will be getting good traffic through them. Small retailers will still be there on the high street and life will go on", said the interviewee.

Management's projections are that in the next 12 months or so the company will achieve great improvements in processes, greater lock-in of customers and cost savings. It will, in 2 to 5 years, have full sale side capability in place and have significantly balanced all its procurement (direct and indirect). The full formation of electronic environment for procurement of goods and services, with 14 other companies, is seen as an achievement in the next 2 to 5 years.

4.9 Semi-Structured Interviews Analysis

Of the seven companies involved in the semi-structured interviews, all seven were involved in electronic commerce. The key issues were identified using content analysis, based on Table 2.1, presented in chapter 2 of this thesis. This section covers:

- Summary of companies' involvement in electronic commerce
- Benefits of electronic commerce achieved by the participating companies
- Challenges or problems of electronic commerce experienced in the participating companies
- Identified success factors of electronic commerce in the participating companies

4.10 Conclusion

A summary of the major findings from the interviews, with regard to companies' involvement in electronic commerce, and the benefits, challenges and success factors of electronic commerce, is represented in the following tables.

Table 4.9 Companies' Involvement in Electronic Commerce

	Started using electronic commerce	Technology that supports EC at the company	Models of company's electronic commerce	Electronic aspects of company's business	Use of payment methods
COMPANY A	1998	Internet, Intranet and EDI	Business to Business and Business to Consumer	Marketing and Selling	Credit card, cash, check
COMPANY B	1997	Internet	Business to Business and Business to Consumer	Marketing, Buying and Selling	Credit card, cash, check
COMPANY C	1998	Internet	Business to Business, Business to Consumer and Consumer to Consumer	Marketing and Selling	E-payment, credit card, cash, check
COMPANY D	1990	Internet, Intranet and EDI	Business to Business and Business to Consumer	Marketing, Buying and Selling	Credit card, cash, check
COMPANY E	1999	Internet, Intranet and EDI	Business to Business and Business to Consumer	Marketing, Buying, Selling and Distribution	Credit card, EFTPOS, cash, check
COMPANY F	1998	Internet, Intranet and Extranet	Business to Business, Business to Consumer and Within the Business	Marketing, Buying, Selling and Distribution	E-payment, credit card, check
COMPANY G	1990	Internet, Intranet and EDI	Business to Business, Business to Consumer and Within the Business	Marketing, Buying, Selling and Distribution	Credit card, cash, check

The summary of the benefits, challenges and success factors identified by all companies that participated in the semi-structured interviews is presented in Tables 4.10 – 4.12.

Table 4.10 Benefits of Electronic Commerce Achieved by the Participating Companies

Benefits of electronic commerce	COMPANY						
	A	B	C	D	E	F	G
Competitive advantage	*	*	*	*	*	*	*
Customer loyalty	*	*		*	*		*
Business efficiency	*		*	*	*	*	
Retained and expanded customer base		*	*	*	*	*	
Acquisition of a niche market			*	*		*	
Reduced operation costs		*				*	
Reduced inventories				*	*		
Improved image			*		*		
Enhanced skills of employees					*		*
Extended application of new technology						*	
Secure electronic commerce environment						*	
Increased automation of processes						*	

From Table 4.10 it can be concluded that the benefits achieved most often by participating companies include competitive advantage, customer loyalty, business efficiency, a retained and expanded customer base, as well as acquisition of a niche market. It is also interesting to note that competitive advantage was a benefit achieved by all the participating companies, while increased automation of processes was achieved by only one company.

Table 4.11 Challenges or Problems of Electronic Commerce Experienced by the Participating Companies

Challenges of electronic commerce	COMPANY						
	A	B	C	D	E	F	G
Web site issues	*	*		*	*	*	*
Budget		*	*	*	*	*	*
Software compatibility	*	*		*			*
Integrating front-end EC to back-end system			*	*	*	*	
Technology cost		*	*	*			
Measuring success					*	*	*
Security			*			*	*
Managing change					*	*	*
Acquiring IT skilled people	*	*				*	
Employee resistance towards e-commerce	*	*	*				
Lack of e-commerce infrastructure		*	*				
Lack of e-commerce knowledge						*	*
Reliable technology vendor						*	*
Internet service provider reliability				*		*	
Reaching customers in rural and regional areas					*		*
Current e-commerce legislation			*	*			

Table 4.11 shows that the challenges encountered most often by participating companies include web site issues, budget, software compatibility, integrating front-end EC to back-end systemsS and technology cost. Furthermore, web site issues as a challenge was encountered by six out of seven participating companies. On the other hand, for example, two out of seven companies encountered current e-commerce legislation as a challenge of electronic commerce.

Table 4.12 Success Factors of Electronic Commerce Identified by the Participating Companies

Success factors of electronic commerce	C O M P A N Y						
	A	B	C	D	E	F	G
Top management support	*	*	*	*	*	*	*
Adequate resources (finance &people)	*	*	*	*	*	*	*
Functional and user-friendly web site	*		*		*	*	*
Secure transactions	*	*			*	*	*
Rapid delivery	*		*	*		*	*
Regular update of the content of the Web site	*	*		*			*
Online catalogue	*	*		*	*		
Effective project leader	*	*			*	*	
Active role of IT department in organization	*			*	*	*	
Appropriate Organization structure	*		*	*		*	
More personalized customer service	*			*		*	*
Integrating web site to all business processes	*		*	*			
Partnership with technology providers			*	*		*	
Partnership with service providers		*		*		*	
Partnership with suppliers	*	*	*				
Advert. in newspapers, magazines, radio & TV				*		*	*
Availability of new intermediaries for EC	*	*		*			
Allowing FAQ on Web site	*		*			*	
Cross-functional project team	*			*			*
Payment via credit card			*		*		
Web site listed on critical search engines	*		*				
Forming alliances with new partners				*	*		
Appropriate Sociotechnical policy	*		*				
Responsive and flexible to the market					*	*	
Excelling in communication with customers			*				*
Being visionary						*	*
The use of new technology						*	
Online personalized recommendations							*
Online tracking facilities	*						
Providing online decision support						*	
Responsive and flexible towards new strategies					*		
Appropriate packaging	*						
Advertising online			*				

From Table 4.12 it can be concluded that the success factors identified most often by participating companies include top management support, adequate resources, functional and user-friendly web site, secure transactions and rapid delivery. It is also interesting to note that top management support and adequate resources were the success factors identified by all the participating companies, while appropriate packaging and advertising online were identified as success factors by only one company each.

As we compare the challenges, success factors and benefits of electronic commerce identified from the semi-structured interviews and summarised in Tables 4.10 – 4.12, with findings from the literature summarised in Table 2.1, we can draw the following conclusions:

- The participating companies who were interviewed have achieved the vast majority of benefits of electronic commerce identified in the literature. These include business efficiency, increased automation of processes, retained and expanded customer base, reduced operation costs, consumer loyalty, competitive advantage and acquisition of a niche market.
- The participating companies in the semi-structured interviews have identified the vast majority of success factors of electronic commerce identified in the literature. These include secure transactions, providing online decision support system, online catalogue, payment via credit card, frequently asked questions, integrating web site to all business processes, online personalised recommendations, functional web site, effective project leader, forming alliances, partnership with suppliers and technology providers, appropriate organisational structure, rapid delivery, disintermediation, more personalised customer service, advertising, adequate resources and being visionary.
- The participating companies in the semi-structured interviews have encountered the majority of challenges of electronic commerce identified in the literature. These include security, software installation, web site issues, measuring success, technology cost, lack of EC infrastructure and legal issues.

CHAPTER FIVE SURVEY AND DATA ANALYSIS

5.1 *Introduction*

This part of the research was undertaken to confirm the electronic commerce issues identified from the semi-structured interviews, presented in Table 4.6 in chapter four. The top 500 Australian companies were surveyed, and the acquired data were consequently analysed.

5.2 Survey Method

To survey the top five hundred Australian companies, spread across the continent, a mail questionnaire survey was the most appropriate method to use. Based on the findings from phases one and two of this research (literature review, chapter two and semi-structured interviews, chapter four), the mail questionnaire comprised the following sections presented on Likert scales:

- Challenges of electronic commerce that inhibit its successful operation
- Success factors of electronic commerce
- Benefits of electronic commerce

In each of these sections spaces were provided for additional information.

The aim of this part of the research was to confirm the findings from the interviews, presented in Chapter five. Postal questionnaires, with a list of questions that were easy to read and follow (Zikmund, 1991), were sent to the senior manager responsible for electronic commerce at each company on 21 August, 2000. The questionnaire, attached as appendix II, was accompanied with a covering letter to explain the purpose of the research and the need for managers to participate. A self-addressed stamped envelope was enclosed for their responses. Within three weeks, 66 useable responses were received. A reminder letter, attached as appendix E, was sent to companies on 11 September, 2000. The need for a certain percentage of responses for the study to be valid was explained in the letter. By the end of September 2000, 35 more responses were received.

5.2 *Response Rate*

The overall response rate for the survey was 21.957 %. That did not include the questionnaires returned undelivered. A 22% response rate was considered acceptable, because mail data collection response rates fall between 5 and 10 percent (Alreck and Settle, 1985). Falconer, and Hodgett, (1999) have cited Galliers, (1987) who reported the London School of Economics' opinion that a response rate of around 10% is the most one can expect from a large mail survey. In their survey conducted in Australia, they found that the major reasons for low response rates were lack of time, organisational constraint, lack of interest in the survey and inapplicability to the organisations, with 67%, 16%, 5.5% and 10.9% respectively (Falconer, and Hodgett, 1999). The data collected from the survey are attached as Appendix III.

5.3 *Data Analysis*

Data gathered from postal questionnaire responses are ordinal and presented on a Likert Scale. The Likert scale was used because it allows participants to respond with degrees of agreement or disagreement (Kerlinger, F., 1986) or to indicate how they agree or disagree with the statement related to a certain issue (Zikmund, 1991). It is commonly used in business research in order to make valuable conclusions (Sekaran, 1992). Likert scales were developed in 1932 by Rensis Likert, to measure the degree of agreement or disagreement with constructed statements.

Participants were asked to rate anticipated challenges, success factors and benefits of electronic commerce in their organisations, as well as encountered, identified and achieved challenges, success factors and benefits respectively. The rating was on a scale from 1 (lowest impact or least important) to 5 (highest impact or most important). This sort of ranking is described as ordinal data (Jordon, 1985; Kerlinger, 1986; Kumar, 1996). Therefore, because the acquired data were measured in an ordinal scale, it was appropriate to perform non-parametric statistical tests (Siegel, 1988).

Non-parametric tests are described as statistical procedures that use nominal or ordinal-scaled data (Zikmund, 1991; Kerlinger, 1986; Jordon, 1985). The advantages of non-parametric statistical tests are that they typically need fewer assumptions

about the data, are much easier to learn and to apply than parametric tests, and finally, are capable of analysing the data inherently in ranks and also of analysing data whose seemingly numerical scores have the strength of ranks (Siegel, 1988).

The response rates from the postal questionnaire are presented on the table 5.1 on the next page.

Table 5.1 Response Rtes from the Postal Questionnaire

Survey	Number sent	Number returned Undelivered	Number returned (No longer with the company)	Number returned (Co policy not to respond to surveys)	Number returned (No EC)	Number returned (Other reasons)	Number returned (Useable for analysis)	Percentage Response Rate
Main Survey n=500	500	12	7	1	14	6	66	14.348 %
Main Survey (after reminder letter)	-	-		-	10	2	35	7.609 %
Total	**500**	**12**	**7**	**1**	**24**	**8**	**101**	**21.957 %**

Tabulation (orderly arrangement of the acquired data in a table) was appropriate as the most basic form and, in many cases, the most useful information for the researcher and the reader, about the data (Zikmund, 1991). For further, deeper analysis, non-parametric tests such as the Kruskal-Wallis test, the Sign test and correlation analysis, as well as computations of median and ranking, were performed. The collated data were analysed using SPSS (Statistical Package for the Social Science) an excellent statistical package (Ghauri et al, 1995), also acknowledged as a comprehensive and flexible statistical analysis package with a user-friendly interface in a Windows environment (Cramer, 1998). The data analysed were acquired from the postal questionnaire attached as appendix II.

The information acquired from the responses were as follows:

Table 5.2 Qualifications of Respondents

Qualifications	Number	Percentage
Secondary	8	7.9 %
Bachelor	75	74.3%
Master	16	15.9%
Other	2	1.9%
Total	**101**	**100 %**

It is apparent from Table 5.2 that more than 74% of respondents were graduates and a further 16 % of respondents had postgraduate qualifications. From the data presented in Table 5.2 it is clear that the vast majority of managers are well educated, which is expected from people who are to be able to deal with both technological and managerial issues in their daily job. This finding was also revealed in the interviews.

Table 5.3 Job Titles of Respondents

Title	Number	Percentage
IT Manager	28	27.8 %
EC Manager	25	24.8 %
Sales Manager	12	11.9 %
Accountant	4	3.9 %
Managing Director	4	3.9 %
General Manager	3	2.9 %
Other	25	24.8 %
Total	**101**	**100 %**

From Table 5.3 it can be seen that the two most popular titles for respondents' jobs were IT Manager and EC Manager (27.8 % and 24.8 % respectively). This shows that the people in charge of electronic commerce in the surveyed companies are largely from the area of IT. However, it is also evident that the specific occupation of EC Manager is emerging as the second strongest, with Sales Managers in charge of this new area of business in third position.

Table 5.4 Responses by Industry Sectors

Industry	Number responded	Percent
Finance/Banking	24	23.9%
Manufacturing	20	19.8%
Communications	12	11.9%
Wholesale and retail trade	11	10.9%
Property and business services	6	5.9%
Transport and Storage	6	5.9%
Recreation and other services	5	4.8%
International Trade	2	1.9%
Insurance	/	/
Research and Development	/	/
Agriculture, forestry, fishing	/	/
Construction	/	/
Publishing	/	/
Medicine/Pharmacy	/	/
Science	/	/
Other	15	14.8%
Total	**101**	**100%**

From Table 5.4 it is interesting to note that the highest percentages of responses were from two industries, namely Finance/Banking and Manufacturing (23.9% and 19.8% respectively).

Since the number of responses from some industries was quite low, in order to make the analysis more comprehensive, the following reclassification was established:

Table 5.5. Responses by Reclassified Industry Sectors

Industry	Number responded	Percent
Finance/Banking	24	23.9%
Manufacturing	20	19.8%
Communications	12	11.9%
Wholesale and retail trade	11	10.9%
Other	34	33.5%
Total	**101**	**100%**

The sequence of presenting the challenges, success factors and benefits of electronic commerce from the postal questionnaire was emulated in the following presentation of analysed data.

5.4 *Challenges of electronic commerce*

To position themsleves to create business value, it is important for businesses to overcome the challenges of electronic commerce. From the literature it is apparent that the most important electronic commerce challenges are business process reengineering, appropriate organisational structure, gaining top managers' support (Hoffman et al., 1999); design and user-friendliness of the web site (Hannon, 1998); and security issues (Markey, 1997, Salnoske, 1997).

The mean values of surveyed companies' responses for anticipated and encountered challenges of electronic commerce are presented in Table 5.6.

Table 5.6 Challenges of Electronic Commerce (anticipated and achieved)

CHALLENGES	Anticipated (Mean)	Encountered (Mean)
Budget	2.810526	3.010526
Employee resistance towards e-commerce	2.336735	2.212766
Measuring success	2.701031	2.736264
Managing change	2.894737	3.064516
Security	2.865979	2.831579
Technology cost	3.103093	3.442105
Web site issues	2.271739	2.406593
Software compatibility	2.649485	2.734043
Lack of e-commerce infrastructure	3.000000	3.010526
Integrating front-end EC to back-end system	3.530612	3.483871
Lack of e-commerce knowledge	3.260417	3.427083
Acquiring IT skilled people	2.876289	3.052632
Reliable technology vendor	2.294737	2.655914
Internet service provider reliability	2.083333	2.208333
Obtaining senior managers support	2.810526	2.568421
Current e-commerce legislation	1.736264	1.527473
Dealing with intermediaries	2.322917	2.031915
Customer service	2.697917	2.726316
Making business known to users	2.635417	2.926316
Reaching customers in rural and regional areas	1.454545	1.574713

Table 5.6 presents the means of electronic commerce challenges that were anticipated and actually encountered by the companies. The figures were extracted from the participants' responses, more specifically from section C of the questionnaire. In section C of the questionnaire the respondents were asked to indicate anticipated and experienced challenges of electronic commerce by their companies. This section included 20 challenges identified from the literature and the semi-structured interviews analysis presented in chapter four. The respondents were asked to circle one response for each item in the anticipated and encountered columns. The two columns (anticipated and encountered) were included in order to identify differences between anticipated and encountered challenges. The possible answers were presented on a Likert scale with zero indicating that no challenges were anticipated or encountered, one indicating the lowest impact and five indicating the highest impact of anticipated or encountered challenges.

In order to find out if there is a significant difference between anticipated and encountered challenges of electronic commerce in participating organisations, the Sign test was performed. The Sign test looks at the direction of differences between two measures and is particularly useful where quantitative measurements are impossible or not feasible (Siegel, 1988). Another feature of the Sign test is that it compares the number of positive and negative differences between scores allocated to the same or matched samples (Cramer, 1998).

The Sign test is presented in Table 5.7.

Table 5.7 Sign Test for Challenges of Electronic Commerce

CHALLENGES	Sign test P- value
Budget	.791
Employee resistance towards e-commerce	.322
Measuring success	.617
Managing change	.082
Security	.677
Technology cost	.000
Web site issues	.291
Software compatibility	.030
Lack of e-commerce infrastructure	.210
Integrating front-end EC to back-end system	1.000
Lack of e-commerce knowledge	.001
Acquiring IT skilled people	.008
Reliable technology vendor	.005
Internet service provider reliability	.381
Obtaining senior managers support	.001
Current e-commerce legislation	.001
Dealing with intermediaries	.001
Customer service	.560
Making business known to users	.059
Reaching customers in rural &regional areas	.007

The results of the Sign test suggest that in 9 out of the 20 challenges, the differences between their anticipated and encountered mean values were statistically significant. This indicated that participating companies in general did not anticipate correctly the influence of nine challenges. Furthermore, seven of the electronic commerce challenges were underestimated by the companies (the anticipated mean was lower than encountered), while the other two were overestimated (the anticipated mean was higher than encountered).

However, the Sign test also determined that in 12 out of the 20 challenges, the differences between their anticipated and encountered means were not statistically significant. This indicated that the surveyed companies had correctly anticipated 12 out of 20 electronic commerce challenges.

In order to establish the importance of each electronic commerce challenge experienced by participating companies, encountered challenges were ranked according to their computed medians. Their rank order is presented in Table 5.8.

Table 5.8 Rank Order for Encountered Challenges of Electronic Commerce

Rank	CHALLENGES	Median	No of cases
1	Lack of e-commerce knowledge	3.0000	96
2	Technology cost	3.0000	95
	Acquiring IT skilled people	3.0000	95
	Lack of e-commerce infrastructure	3.0000	95
	Security	3.0000	95
	Making business known to users	3.0000	95
	Customer service	3.0000	95
8	Budget	3.0000	94
	Software compatibility	3.0000	94
10	Integrating front-end EC to back-end system	3.0000	93
	Managing change	3.0000	93
	Reliable technology vendor	3.0000	93
13	Measuring success	3.0000	91
14	Internet service provider reliability	2.0000	96
15	Obtaining senor managers support	2.0000	95
16	Employee resistance towards e-commerce	2.0000	94
	Dealing with intermediaries	2.0000	94
18	Web site issues	2.0000	91
19	Reaching customers in rural and regional areas	2.0000	87
20	Current e-commerce legislation	1.0000	91

From the median values in Table 5.8 it can be concluded that although the vast majority of companies have encountered the majority of challenges, as confirmed by the semi-structured interviews, their median values differ. For example, technology cost and lack of electronic commerce knowledge have their median values at 3.0000, while current electronic commerce legislation has its median at 1.0000.

5.6 *Success Factors of Electronic Commerce*

To enable businesses to maximise value from electronic commerce it is imperative to identify factors that are critical for success. Some of the success factors identified from the literature include dis-intermediation, appropriate electronic commerce infrastructure, secure electronic commerce transactions, advertising online and being flexible to the market (Mahadevan, 2000). Other authors are inclined towards system design quality (Liu and Arnett, 2000), while for Follit, (2000), the key electronic commerce success factors are an effective project leader, being visionary and acquiring IT-skilled people. Adequate resources are seen as a success factor by Dugan (1999), while more personalised customer service is the success factor for Spiteri

(2000). Finally, for McClure (1998), among the most critical success factors for success in the arena of electronic commerce are cross-functional project teams and integrating web site sales with the company's accounting software.

The mean values of the surveyed companies' responses for anticipated and identified success factors of electronic commerce are presented in Table 5.9.

Table 5.9 Success Factors of Electronic Commerce (anticipated and identified)

Success factors	Anticipated mean	Identified mean
Adequate resources (finance &people)	3.126316	3.776596
Top management support	3.787234	3.860215
Appropriate Sociotechnical policy	2.202532	2.223684
Appropriate Organization structure	2.872340	3.043011
Appropriate metrics to measure success	2.629213	2.848837
Active role of IT department in organization	3.033333	3.235955
Cross-functional project team	3.483871	3.577778
Effective project leader	4.218750	4.365591
Being visionary	3.806818	3.705882
Responsive and flexible towards new strategies	3.588889	3.586207
Responsive and flexible to the market	3.733333	3.816092
Comprehensive e-commerce legislation	1.921348	1.930233
Forming alliances with new partners	3.391304	3.651685
Partnership with technology providers	3.468085	3.634409
Partnership with service providers	3.136842	3.085106
Partnership with suppliers	3.031579	3.021277
The use of new technology	3.715789	3.712766
Secure transactions	3.833333	4.022472
Integrating web site to all business processes	3.065934	3.255556
Functional and user-friendly web site	3.440860	3.663043
Regular update of the content of the Web site	3.694737	3.793478
Web site listed on critical search engines	2.768293	2.443038
Online catalogue	2.572917	2.666667
Online tracking facilities	2.882353	2.914634
Providing online decision support	2.097826	2.269663
Online personalized recommendations	2.466667	2.426829
Allowing FAQ on Web site	2.510870	2.761905
Electronic payment system	2.842697	2.779070
Payment via credit card	3.072917	3.118280
Advertising online	2.287356	2.023256
Advert. in newspapers, magazines, radio & TV	2.677419	2.722222
Rapid delivery	3.604167	3.892473
Appropriate packaging	2.011905	2.271605
More personalized customer service	3.413043	3.835294
Excelling in communication with customers	3.333333	3.779221
Disintermediariation	2.666667	2.210526
Availability of new intermediaries for EC	2.313953	2.170732

Table 5.9 presents the mean values of success factors of electronic commerce that were anticipated and identified by the companies. The figures were extracted from the participants' responses, more specifically from section D of the questionnaire. In section D the respondents were asked to indicate the anticipated and identified success

factors of electronic commerce by their companies. This section included 37 success factors identified from the literature and analysis of the semi-structured interviews presented in chapter four. The respondents were asked to circle one response for each item in the anticipated and identified columns. The two columns (anticipated and identified) were included in order to identify discrepancies between anticipated and identified success factors. The possible answers were presented on a Likert scale with zero indicating that no success factors were anticipated or identified, one indicating the least important and five indicating the most important of anticipated or identified success factors.

In order to find out if there is a significant difference between the anticipated and identified success factors of electronic commerce in participating organisations, the Sign test was performed. The Sign test is presented in Table 5.10 on the next page.

Table 5.10 Sign Test for Success Factors of Electronic Commerce

Success factors	Sign test P- value
Adequate resources (finance &people)	.000
Top management support	.629
Appropriate Sociotechnical policy	.063
Appropriate Organisation structure	.067
Appropriate metrics to measure success	.061
Active role of IT department in organisation	.054
Cross-functional project team	.134
Effective project leader	.000
Being visionary	.078
Responsive and flexible towards new strategies	1.000
Responsive and flexible to the market	1.000
Comprehensive e-commerce legislation	.189
Forming alliances with new partners	.002
Partnership with technology providers	.021
Partnership with service providers	.824
Partnership with suppliers	1.000
The use of new technology	.383
Secure transactions	.089
Integrating web site to all business processes	.123
Functional and user-friendly web site	.000
Regular update of the content of the Web site	.522
Web site listed on critical search engines	.000
Online catalogue	.481
Online tracking facilities	1.000
Providing online decision support	.000
Online personalized recommendations	1.000
Allowing FAQ on Web site	.003
Electronic payment system	.719
Payment via credit card	1.000
Advertising online	.000
Advert. in newspapers, magazines, radio & TV	1.000
Rapid delivery	.050
Appropriate packaging	.005
More personalized customer service	.000
Excelling in communication with customers	.000
Disintermediariation	.003
Availability of new intermediaries for EC	.648

The results of the Sign test suggest that in 14 out of the 37 success factors, the differences between their anticipated and identified means were statistically significant. This indicated that participating companies in general did not anticipate correctly the influence of 14 success factors. Furthermore, 11 out of those 14

electronic commerce success factors were underestimated by the companies (the anticipated mean was lower than identified), while the other three were overestimated (the anticipated mean was higher than identified).

The Sign test also determined that in 24 out of the 37 success factors, the differences between their anticipated and identified means were not statistically significant. This indicated that the surveyed companies had correctly anticipated 24 out of 37 electronic commerce success factors.

In order to establish the importance of each electronic commerce success factor experienced by participating companies, the identified success factors were ranked according to their computed medians. Their rank order is presented in Table 5.11 on the next page.

Table 5.11 Rank Order for Identified Success Factors of Electronic Commerce

Rank	Success factors	Median	No of cases
1	Effective project leader	5.0000	93
2	Secure transactions	5.0000	89
3	Adequate resources (finance &people)	4.0000	94
	The use of new technology	4.0000	94
5	Rapid delivery	4.0000	93
	Top management support	4.0000	93
	Partnership with technology providers	4.0000	93
	Payment via credit card	4.0000	93
9	Regular update of the content of the Web site	4.0000	92
	Functional and user-friendly web site	4.0000	92
11	Cross-functional project team	4.0000	90
	Integrating web site to all business processes	4.0000	90
13	Forming alliances with new partners	4.0000	89
14	Responsive and flexible towards new strategies	4.0000	87
	Responsive and flexible to the market	4.0000	87
16	More personalized customer service	4.0000	85
	Being visionary	4.0000	85
18	Excelling in communication with customers	4.0000	77
19	Partnership with service providers	3.0000	94
	Partnership with suppliers	3.0000	94
21	Appropriate Organization structure	3.0000	93
	Online catalogue	3.0000	93
23	Advert..in newspapers, magazines, radio & TV	3.0000	90
	Providing online decision support	3.0000	89
	Active role of IT department in organization	3.0000	89
26	Appropriate metrics to measure success	3.0000	86
	Electronic payment system	3.0000	86
28	Allowing FAQ on Web site	3.0000	84
29	Availability of new intermediaries for EC	3.0000	82
	Online tracking facilities	3.0000	82
	Online personalized recommendations	3.0000	82
32	Appropriate packaging	3.0000	81
33	Comprehensive e-commerce legislation	2.0000	86
	Advertising online	2.0000	86
35	Web site listed on critical search engines	2.0000	79
36	Appropriate Sociotechnical policy	2.0000	76
	Disintermediariation	2.0000	76

From Table 5.11 it can be concluded that although the vast majority of companies have identified the majority of presented success factors, as confirmed by the semi structured interviews, their values also differ for each category. For example, the figures for effective project leader and secure transactions have their median value at 5.0000, while comprehensive electronic commerce legislation is at 2.0000.

5.7 *Benefits of Electronic Commerce*

Business enterprises are able to achieve the benefits of electronic commerce such as business efficiency, increasing sales, expanding customer base, reduced operation costs, etc (Weil and Broadbent, 1998; Moore, 2000; Leland, 2000) They can also achieve the benefits of increased automation of processes (Begley, 1999) and more personalised customer service (Pitturo, 1999).

The mean values of surveyed companies' responses for anticipated and achieved benefits of electronic commerce are presented in Table 5.12.

Table 5.12 Benefits of Electronic Commerce (anticipated and achieved)

Benefits	Anticipated mean	Achieved mean
Business efficiency	3.936842	3.149425
Retained and expanded customer base	3.639175	2.966292
Acquisition of a niche market	2.559140	2.433735
Increased sales	3.257732	2.956044
Customer loyalty	3.446809	3.059524
Reduced operation costs	3.676768	2.677778
Reduced inventories	2.457447	1.835294
Secure electronic commerce environment	3.224719	2.855422
Extended application of new technology	3.010309	2.876404
Enhanced skills of employees	3.087912	3.037500
Increased automation of processes	3.563830	3.129412
Competitive advantage	3.673684	3.500000
Improved image	3.677778	3.573171
Better knowledge management	2.693182	2.256410

Table 5.12 presents the mean values of the benefits of electronic commerce that were anticipated and achieved by the companies. All 14 benefits have their anticipated mean values higher than those achieved, indicating that participants were expecting to achieve more benefits than they actually achieved. The figures were extracted from the participants' responses, more specifically from section E of the questionnaire. In section E the respondents were asked to indicate the anticipated and achieved benefits of electronic commerce by their companies.

This section included 14 benefits identified from the literature and the analysis of the semi-structured interviews presented in chapter four. The respondents were asked to

circle one response for each item in the anticipated and achieved columns. The two columns (anticipated and achieved) were included in order to identify discrepancies between anticipated and achieved benefits. The possible answers were presented on a Likert scale with zero indicating no benefits were anticipated or achieved, one indicating that minimum benefits were anticipated or achieved and five indicating that maximum benefit were anticipated or achieved.

In order to find out if there is a significant difference between the anticipated and achieved benefits of electronic commerce in participating organisations, the Sign test was performed. The Sign test is presented in Table 5.13

Table 5.13 Sign Test for Benefits of Electronic Commerce

Benefits	Sign test P- value
Business efficiency	.000
Retained and expanded customer base	.000
Acquisition of a niche market	.332
Increased sales	.000
Customer loyalty	.000
Reduced operation costs	.000
Reduced inventories	.000
Secure electronic commerce environment	.000
Extended application of new technology	.023
Enhanced skills of employees	1.000
Increased automation of processes	.021
Competitive advantage	.021
Improved image	.243
Better knowledge management	.000

The results of the Sign test suggest that in 11 out of the 14 benefits, the differences between their anticipated and achieved means were statistically significant. This indicated that all these 11 electronic commerce benefits were overestimated by the surveyed companies (the anticipated mean was higher than achieved).

The Sign test also determined that in 3 out of the 14 benefits, the differences between their anticipated and achieved mean values were not *statistically* significant. On that basis it can be concluded that the surveyed companies had correctly anticipated only 3 electronic commerce benefits (although slightly overestimating all of them).

In order to establish the importance of each electronic commerce benefit experienced by the participating companies, the achieved benefits were ranked according to their computed medians. Their rank order is presented in Table 5.14.

Table 5.14 Rank Order for Achieved Benefits of Electronic Commerce

Rank	Benefits	Median	No of cases
1	Competitive advantage	4.0000	90
2	Improved image	4.0000	82
3	Increased sales	3.0000	91
4	Reduced operation costs	3.0000	90
5	Retained and expanded customer base	3.0000	89
	Extended application of new technology	3.0000	89
7	Business efficiency	3.0000	87
8	Increased automation of processes	3.0000	85
9	Customer loyalty	3.0000	84
10	Secure electronic commerce environment	3.0000	83
	Acquisition of a niche market	3.0000	83
12	Enhanced skills of employees	3.0000	80
13	Better knowledge management	3.0000	78
14	Reduced inventories	2.0000	85

From Table 5.14 it can be concluded that the vast majority of companies have achieved the majority of the anticipated benefits of electronic commerce. However, the values differ for each category. For example, the figures for improved image and competitive advantage have median values of 4.0000, while the median value for reduced inventories is 2.0000.

The fact that all the benefits of electronic commerce were overestimated shows that expectations among the majority of companies participating in the survey were high. One of the explanations could be that companies are influenced by the literature available on electronic commerce benefits, which encourages them to participate. (Chapter two – literature review). Secondly, anecdotal evidence suggests that people believed, especially in early stages of adopting electronic commerce as a way of doing business, that it was normal to expect to reap the benefits once you are in this lucrative area. Finally, the semi-structured interviews (Chapter four) revealed that some of the senior managers in participating companies expected to achieve many more benefits from electronic commerce than they actually did. According to the

semi-structured interviews (Chapter four), in some companies only 3 or 4 out of 14 possible benefits were achieved.

This, however, does not mean that all of the participating organisations overestimated all of the benefits of electronic commerce. It is certainly possible to find some of the 101 participating companies that did not overestimate all of the benefits of electronic commerce. However, in order to investigate the expected and achieved benefits among the four industries with the highest response rates, their anticipated and achieved means were computed and are presented in Table 5.14 A on the next page.

Table 5.14 A Benefits of Electronic Commerce (anticipated and achieved) in Four Industries with Highest Response Rates

Benefits	Finance/Banking		Manufacturing		Communications		Wholesale/Retail	
	Anticipated mean	Achieved mean	Anticipated mean	Achieved mean	Anticipated mean	Achieved mean	Anticipated mean	Achieved mean
Business efficiency	4.0870	3.4091	3.6111	2.8889	4.0909	2.8889	3.5455	3.1111
Retained and expanded cust. base	3.6522	2.9091	3.8421	3.0556	3.3333	2.4000	3.4544	3.2222
Acquisition of a niche market	2.3182	1.9048	2.9444	2.8824	2.0000	1.9000	2.7000	2.7500
Increased sales	3.3913	3.0000	3.4211	3.0000	3.0000	2.6364	3.0000	2,8889
Customer loyalty	3.1304	2.6818	4.0588	3.1875	3.1818	2.6667	3.3636	3.2222
Reduced operation costs	4.0435	2.9091	3.6316	2.4444	3.7500	3.0000	3.0909	2.4000
Reduced inventories	2.0000	1.5455	2.7059	2.0000	2.1818	1.5556	2.7273	1.8889
Secure EC environment	3.1364	2.6667	3.5294	3.0625	2.9091	2.5455	3.4000	3.2500
Extended application of new tech.	2.6957	2.8182	3.2632	2.8333	3.0000	2.4545	3.4545	3.5556
Enhanced skills of employees	2.7727	2.8500	3.5000	3.1765	3.2000	3.2000	3.2000	3.1250
Increased automation of processes	3.4348	3.0455	3.3889	2.9412	3.8182	3.1111	3.5455	3.6000
Competitive advantage	3.6522	3.2273	4.2222	4.0000	3.5455	2.8182	3.6000	4.0000
Improved image	3.3636	3.2857	4.0000	4.0625	3.3182	3.5455	3.4000	3.3750
Better knowledge management	2.3500	1.8947	3.1765	2.9375	3.0909	2.1111	26000	2.5000

Table 5.14A presents the mean values of benefits of electronic commerce that were anticipated and achieved by the companies in the four industries. From the table it can be concluded that the majority of benefits have their anticipated mean values higher than those achieved, indicating that participants were expecting to achieve more benefits than they actually achieved. However, in some cases it was just the opposite, some of benefits having their achieved mean values higher than those anticipated, indicating that participants underestimated the magnitude of those benefits, basically expecting to achieve fewer benefits than they actually achieved.

In the finance/banking industry the benefits that had their achieved mean values higher than anticipated are extended application of new technology and enhanced skills of employees. In the manufacturing industry it was improved image, while in the communication industry underestimated benefits were enhanced skills of employees and improved image. Finally in the wholesale/retail industry the underestimated benefits included acquisition of a niche market, extended application of new technologies, increased automation of processes and competitive advantage.

To compare responses from the entire sample of surveyed companies, with the responses from the four industries with highest response rates, medians and rank orders were computed. These are presented in following sections in descending order.

5.8 *Finance/Banking Industry (response rate 23.9 %)*

The challenges of electronic commerce in this industry are presented in Table 5.15.

Table 5. 15 Rank Order for Challenges of Electronic Commerce in the Finance/Banking Industry

Rank	CHALLENGES	Median	No of cases
1	Technology cost	3.0000	24
	Lack of e-commerce knowledge	3.0000	24
	Budget	3.0000	24
	Acquiring IT skilled people	3.0000	24
	Customer service	3.0000	24
6	Managing change	3.0000	23
	Measuring success	3.0000	23
	Lack of e-commerce infrastructure	3.0000	23
9	Integrating front-end EC to back-end system	2.5000	24
	Reliable technology vendor	2.5000	24
	Security	2.5000	24
12	Making business known to users	2.0000	24
	Obtaining senor managers support	2.0000	24
	Internet service provider reliability	2.0000	24
	Software compatibility	2.0000	24
	Dealing with intermediaries	2.0000	24
17	Employee resistance towards e-commerce	2.0000	23
	Web site issues	2.0000	23
	Reaching customers in rural and regional areas	2.0000	23
20	Current e-commerce legislation	1.0000	24

From Table 5.15 it can be concluded that the most frequent challenges encountered in the Finance/Banking industry include technology cost, lack of EC knowledge, budget, acquiring IT skilled people and customer service.

Electronic commerce success factors in this industry are presented in Table 5.16.

Table 5.16 Rank Order for Success Factors of Electronic Commerce in the Finance/Banking Industry

Rank	Success factors	Median	No of cases
1	Secure transactions	5.0000	22
2	Top management support	4.0000	23
	Functional and user-friendly web site	4.0000	23
	Partnership with technology providers	4.0000	23
5	Effective project leader	4.0000	22
	Adequate resources (finance &people)	4.0000	22
	Regular update of the content of the Web site	4.0000	22
	Rapid delivery	4.0000	22
9	Responsive and flexible to the market	4.0000	21
	Being visionary	4.0000	21
	Responsive and flexible towards new strategies	4.0000	21
12	More personalized customer service	4.0000	20
13	Integrating web site to all business processes	3.5000	22
14	Excelling in communication with customers	3.5000	18
15	The use of new technology	3.0000	23
	Appropriate Organization structure	3.0000	23
	Partnership with service providers	3.0000	23
	Partnership with suppliers	3.0000	23
19	Online catalogue	3.0000	22
	Forming alliances with new partners	3.0000	22
	Payment via credit card	3.0000	22
22	Cross-functional project team	3.0000	21
	Active role of IT department in organization	3.0000	21
	Online tracking facilities	3.0000	21
	Advert. in newspapers, magazines, radio & TV	3.0000	21
	Electronic payment system	3.0000	21
27	Allowing FAQ on Web site	3.0000	21
28	Appropriate metrics to measure success	3.0000	20
	Online personalized recommendations	3.0000	20
30	Providing online decision support	2.5000	22
	Advertising online	2.5000	22
	Availability of new intermediaries for EC	2.5000	22
33	Web site listed on critical search engines	2.0000	20
	Comprehensive e-commerce legislation	2.0000	20
35	Appropriate Sociotechnical policy	2.0000	18
36	Appropriate packaging	1.0000	19
	Disintermediariation	1.0000	19

Table 5.16 indicates that the most commonly identified success factors in the Finance/Banking industry include secure transactions, top management support, a functional and user-friendly web site, partnership with technology provider and effective project leaders.

The benefits of electronic commerce in this industry are presented in Table 5.17.

Table 5.17 Rank Order for the Benefits of Electronic Commerce in the Finance/Banking Industry

Rank	Benefits	Median	No of cases
1	Increased sales	3.5000	22
2	Business efficiency	3.0000	22
	Competitive advantage	3.0000	22
	Increased automation of processes	3.0000	22
	Retained and expanded customer base	3.0000	22
	Reduced operation costs	3.0000	22
	Extended application of new technology	3.0000	22
	Customer loyalty	3.0000	22
	Secure electronic commerce environment	3.0000	22
10	Improved image	3.0000	21
11	Enhanced skills of employees	3.0000	20
12	Reduced inventories	2.0000	22
13	Better knowledge management	2.0000	19
14	Acquisition of a niche market	1.0000	21

Table 5.17 indicates that the benefits achieved most in the Finance/Banking industry include increased sales, business efficiency, competitive advantage, increased automation of processes and retained and expanded customer base.

5.9 *Manufacturing Industry (response rate 19.8 %)*

The challenges of electronic commerce in this industry are presented in Table 5.18.

Table 5. 18 Rank Order for Challenges of Electronic Commerce in the Manufacturing Industry

Rank	CHALLENGES	Median	No of cases
1	Lack of e-commerce knowledge	3.0000	19
	Technology cost	3.0000	19
	Lack of e-commerce infrastructure	3.0000	19
	Making business known to users	3.0000	19
	Security	3.0000	19
	Acquiring IT skilled people	3.0000	19
	Managing change	3.0000	19
	Customer service	3.0000	19
	Budget	3.0000	19
	Internet service provider reliability	3.0000	19
10	Integrating front-end EC to back-end system	3.0000	18
	Software compatibility	3.0000	18
	Reliable technology vendor	3.0000	18
	Web site issues	3.0000	18
15	Measuring success	2.0000	19
	Obtaining senior managers support	2.0000	19
	Dealing with intermediaries	2.0000	19
	Employee resistance towards e-commerce	2.0000	19
19	Reaching customers in rural and regional areas	2.0000	17
20	Current e-commerce legislation	1.0000	16

From Table 5.18 it can be concluded that among the most frequent challenges encountered in the manufacturing industry is a lack of e-commerce knowledge followed by technology cost, lack of e-commerce infrastructure, making business known to users, security, etc.

Electronic commerce success factors in this industry are presented in Table 5.19.

Table 5.19 Rank Order of Success Factors of Electronic Commerce in the Manufacturing Industry

Rank	Success factors	Median	No of cases
1	Effective project leader	5.0000	19
2	Excelling in communication with customers	5.0000	15
3	Functional and user-friendly web site	4.0000	19
	Rapid delivery	4.0000	19
	Secure transactions	4.0000	19
	Top management support	4.0000	19
	The use of new technology	4.0000	19
	Forming alliances with new partners	4.0000	19
	Regular update of the content of the Web site	4.0000	19
	Adequate resources (finance &people)	4.0000	19
	Partnership with technology providers	4.0000	19
	Responsive and flexible to the market	4.0000	19
	Advert..in newspapers, magazines, radio & TV	4.0000	19
14	Being visionary	4.0000	18
	Cross-functional project team	4.0000	18
	Active role of IT department in organization	4.0000	18
	Responsive and flexible towards new strategies	4.0000	18
	Integrating web site to all business processes	4.0000	18
19	More personalized customer service	4.0000	17
	Online tracking facilities	4.0000	17
	Allowing FAQ on Web site	4.0000	17
22	Partnership with service providers	3.0000	19
	Partnership with suppliers	3.0000	19
	Payment via credit card	3.0000	19
	Appropriate Organization structure	3.0000	19
	Online catalogue	3.0000	19
27	Electronic payment system	3.0000	18
	Online personalized recommendations	3.0000	18
	Providing online decision support	3.0000	18
	Advertising online	3.0000	18
	Appropriate metrics to measure success	3.0000	18
32	Web site listed on critical search engines	3.0000	17
33	Appropriate packaging	3.0000	16
	Availability of new intermediaries for EC	3.0000	16
35	Disintermediariation	3.0000	15
36	Comprehensive e-commerce legislation	2.0000	17
37	Appropriate Sociotechnical policy	2.0000	16

Table 5.19 indicates that the most commonly identified success factors in the manufacturing industry include an effective project leader, excelling in communication with customers, a functional and user-friendly web site, rapid delivery and secure transactions.

Benefits of electronic commerce in this industry are presented in Table 5.20.

Table 5.20 Rank Order for the Benefits of Electronic Commerce in the Manufacturing Industry

Rank	Benefits	Median	No of cases
1	Competitive advantage	4.0000	17
	Increased automation of processes	4.0000	17
3	Improved image	4.0000	16
4	Retained and expanded customer base	3.5000	18
5	Increased sales	3.0000	18
	Business efficiency	3.0000	18
	Extended application of new technology	3.0000	18
	Reduced operation costs	3.0000	18
9	Acquisition of a niche market	3.0000	17
10	Secure electronic commerce environment	2.0000	17
	Enhanced skills of employees	3.0000	17
12	Customer loyalty	3.0000	16
	Reduced inventories	3.0000	16
14	Better knowledge management	1.0000	16

Table 5.20 indicates that among the most achieved benefits in manufacturing industry are competitive advantage followed by increased automation of processes, improved image, retained and expanded customer base and increased sales.

5.10 *Communication Industry (response rate 11.9 %)*

The challenges of electronic commerce in this industry are presented in Table 5.21.

Table 5. 21 Rank Order for Challenges of Electronic Commerce in the Communication Industry

Rank	CHALLENGES	Median	No of cases
1	Lack of e-commerce infrastructure	3.5000	12
2	Managing change	3.0000	12
	Technology cost	3.0000	12
	Lack of e-commerce knowledge	3.0000	12
	Acquiring IT skilled people	3.0000	12
	Making business known to users	3.0000	12
	Customer service	3.0000	12
8	Integrating front-end EC to back-end system	3.0000	11
	Budget	3.0000	11
10	Reliable technology vendor	2.0000	12
	Obtaining senor managers support	2.0000	12
	Security	2.0000	12
	Software compatibility	2.0000	12
	Web site issues	2.0000	12
	Internet service provider reliability	2.0000	12
	Employee resistance towards e-commerce	2.0000	12
17	Dealing with intermediaries	2.0000	11
18	Measuring success	2.0000	10
19	Reaching customers in rural and regional areas	1.5000	12
20	Current e-commerce legislation	1.0000	12

From Table 5.21 it can be concluded that among the most frequent challenges encountered in the communication industry is a lack of e-commerce knowledge followed by technology cost, lack of e-commerce infrastructure, making business known to users, security, etc.

Electronic commerce success factors in this industry are presented in Table 5.22.

Table 5.22 Rank Order for Success Factors of Electronic Commerce in the Communication Industry

Rank	Success factors	Median	No of cases
1	More personalized customer service	5.0000	11
2	Effective project leader	4.0000	11
	Regular update of the content of the Web site	4.0000	11
	Excelling in communication with customers	4.0000	11
	Adequate resources (finance &people)	4.0000	11
	Functional and user-friendly web site	4.0000	11
	Rapid delivery	4.0000	11
	Secure transactions	4.0000	11
	The use of new technology	4.0000	11
	Top management support	4.0000	11
	Partnership with technology providers	4.0000	11
12	Responsive and flexible to the market	4.0000	10
13	Responsive and flexible towards new strategies	3.5000	10
14	Being visionary	3.0000	11
	Cross-functional project team	3.0000	11
	Forming alliances with new partners	3.0000	11
	Partnership with suppliers	3.0000	11
	Integrating web site to all business processes	3.0000	11
	Allowing FAQ on Web site	3.0000	11
	Appropriate Organization structure	3.0000	11
	Payment via credit card	3.0000	11
	Advert..in newspapers, magazines, radio & TV	3.0000	11
	Partnership with service providers	3.0000	11
	Appropriate packaging	3.0000	11
	Online personalized recommendations	3.0000	11
	Online catalogue	3.0000	11
27	Active role of IT department in organization	3.0000	10
	Online tracking facilities	3.0000	10
	Electronic payment system	3.0000	10
	Availability of new intermediaries for EC	3.0000	10
31	Appropriate metrics to measure success	2.0000	11
	Advertising online	2.0000	11
33	Disintermediariation	2.0000	10
34	Web site listed on critical search engines	2.0000	9
	Appropriate Sociotechnical policy	2.0000	9
36	Providing online decision support	1.0000	11
	Comprehensive e-commerce legislation	1.0000	11

Table 5.22 indicates that among the most commonly identified success factors in the communication industry are more personalised customer service followed by an effective project leader, regular updates of the content of the Web site, excelling in communication with customers and adequate resources.

The benefits of electronic commerce in this industry are presented in Table 5.23.

Table 5.23 Rank Order for the Benefits of Electronic Commerce in the Communication Industry

Rank	Benefits	Median	No of cases
1	Improved image	3.0000	11
	Competitive advantage	3.0000	11
	Increased sales	3.0000	11
	Secure electronic commerce environment	3.0000	11
	Extended application of new technology	3.0000	11
6	Retained and expanded customer base	3.0000	10
	Enhanced skills of employees	3.0000	10
	Reduced operation costs	3.0000	10
9	Increased automation of processes	3.0000	9
	Business efficiency	3.0000	9
	Better knowledge management	3.0000	9
12	Customer loyalty	2.0000	9
13	Acquisition of a niche market	1.5000	10
14	Reduced inventories	1.0000	9

Table 5.23 indicates that the benefits achieved most in the communication industry include improved image, competitive advantage, increased sales, secure electronic commerce environment and extended application of new technology.

5.11 *Wholesale and Retail Industry (response rate 10.9 %)*

The challenges of electronic commerce in this industry are presented in Table 5.24.

Table 5. 24 Rank Order for Challenges of Electronic Commerce in the Wholesale and Retail Industry

Rank	CHALLENGES	Median	No of cases
1	Lack of e-commerce knowledge	4.0000	10
2	Security	4.0000	9
	Technology cost	4.0000	9
	Managing change	4.0000	9
	Acquiring IT skilled people	4.0000	9
	Customer service	4.0000	9
7	Internet service provider reliability	3.0000	10
	Obtaining senor managers support	3.0000	10
	Lack of e-commerce infrastructure	3.0000	10
10	Measuring success	3.0000	9
	Software compatibility	3.0000	9
	Integrating front-end EC to back-end system	3.0000	9
	Making business known to users	3.0000	9
	Budget	3.0000	9
15	Reliable technology vendor	3.0000	8
	Web site issues	3.0000	8
17	Employee resistance towards e-commerce	2.0000	9
	Reaching customers in rural and regional areas	2.0000	9
19	Dealing with intermediaries	2.0000	8
20	Current e-commerce legislation	1.0000	9

From Table 5.24 it can be concluded that among the most frequent challenges encountered in the wholesale and retail industry are lack of e-commerce knowledge followed by security, technology cost, managing change and acquiring IT skilled people.

Electronic commerce success factors in this industry are presented in Table 5.25.

Table 5.25 Rank Order for Success Factors of Electronic Commerce in the Wholesale and Retail Industry

Rank	Success factors	Median	No of cases
1	Effective project leader	5.0000	10
2	More personalized customer service	5.0000	9
	Being visionary	5.0000	9
	Excelling in communication with customers	5.0000	9
5	Top management support	4.5000	10
6	Rapid delivery	4.0000	10
	Functional and user-friendly web site	4.0000	10
	Regular update of the content of the Web site	4.0000	10
	Adequate resources (finance &people)	4.0000	10
	Partnership with technology providers	4.0000	10
	Cross-functional project team	4.0000	10
	Forming alliances with new partners	4.0000	10
	The use of new technology	4.0000	10
	Payment via credit card	4.0000	10
	Online tracking facilities	4.0000	10
	Online catalogue	4.0000	10
	Electronic payment system	4.0000	10
18	Secure transactions	4.0000	9
	Responsive and flexible towards new strategies	4.0000	9
	Responsive and flexible to the market	4.0000	9
	Appropriate metrics to measure success	4.0000	9
22	Partnership with service providers	3.5000	10
	Integrating web site to all business processes	3.5000	10
	Active role of IT department in organization	3.5000	10
	Partnership with suppliers	3.5000	10
26	Appropriate packaging	3.5000	8
27	Allowing FAQ on Web site	3.0000	10
	Disintermediariation	3.0000	10
	Providing online decision support	3.0000	10
	Advert..in newspapers, magazines, radio & TV	3.0000	10
31	Appropriate Organization structure	3.0000	9
	Online personalized recommendations	3.0000	9
	Web site listed on critical search engines	3.0000	9
34	Availability of new intermediaries for EC	2.5000	10
35	Comprehensive e-commerce legislation	2.0000	9
36	Appropriate Sociotechnical policy	2.0000	8
	Advertising online	2.0000	8

Table 5.25 indicates that the most commonly identified success factors in the wholesale and retail industry include an effective project leader, more personalised customer service, being visionary, excelling in communication with customers and top management support.

The benefits of electronic commerce in this industry are presented in Table 5.26.

Table 5.26 Rank Order for the Benefits of Electronic Commerce in the Wholesale and Retail Industry

Rank	Benefits	Median	No of cases
1	Increased automation of processes	4.0000	10
2	Competitive advantage	4.0000	9
	Retained and expanded customer base	4.0000	9
4	Secure electronic commerce environment	3.5000	8
5	Reduced operation costs	3.0000	10
6	Acquisition of a niche market	3.0000	9
	Extended application of new technology	3.0000	9
	Business efficiency	3.0000	9
	Customer loyalty	3.0000	9
	Increased sales	3.0000	9
11	Improved image	3.0000	8
	Enhanced skills of employees	3.0000	8
13	Reduced inventories	2.0000	9
14	Better knowledge management	2.0000	8

Table 5.26 indicates that the benefits most achieved in the wholesale and retail industry include iincreased automation of processes, competitive advantage, a retained and expanded customer base, secure electronic commerce environment and reduced operation costs.

5.12 *Summary and Comparison of Challenges, Success Factors and Benefits in Four Industries*

A summary of the top five challenges, success factors and benefits for each of these four industries is presented in Table 5.27 on the next page.

Table 5.27 Top Five Challenges, Success Factors and Benefits in Four Industries with the Highest Responses

			R	A		N	K
			1	2	3	4	5
CHALLENGES	INDUSTRIES	Finan. and Bank.	Technology costs	Lack of EC knowledge	Budget	Acquiring IT skilled people	Customer service
		Manu factu ring	Lack of EC knowledge	Technology cost	Lack of EC infrastructure	Making business known to users	Security
		Comm unica tion	Lack of EC infrastructure	Managing change	Technology costs	Lack of EC knowledge	Acquiring IT skilled people
		Whole sale & retail	Lack of EC knowledge	Security	Technology cost	Managing change	Acquiring IT skilled people
SUCCESS FACTORS	INDUSTRIES	Bank. and Finan.	Secure transactions	Top management support	Functional and user-friendly web site	Partnership With Technology provider	Effective project leader
		Manu factu ring	Effective project leader	Excelling in communication with customers	Functional and user-friendly web site	Rapid delivery	Secure transactions
		Comm unica tion	More personalised customer service	Effective project leader	Regular update of the content of the web site	Excelling in communication with customers	Adequate resources
		Whole sale & retail	Effective project leader	More personalised customer service	Being visionary	Excelling in communication with customers	Top management support
BENEFITS	INDUSTRIES	Bank. and Finan.	Increased sales	Business efficiency	Competitive advantage	Increased automation of processes	Retained and Extended Customer base
		Manu factu ring	Competitive advantage	Increased automation of processes	Improved image	Retaining and expanding customer base	Increased sales
		Comm unica tion	Improved image	Competitive advantage	Increased sales	Secure EC environment	Extended Application of New technology
		Whole sale & retail	Increased automation of processes	Competitive advantage	Retained and expanded customer base	Secure EC environment	Reduced Operating costs

If we compare the top five challenges, success factors and benefits for the four industries, with the top 5 and 10 challenges, success factors and benefits for the entire sample we can see the following:

Challenges

All of the top five challenges for the Finance/Banking industry are represented in the top ten challenges for the entire sample. 60% of them are represented in the top 5 challenges for the entire sample.

All of the top five challenges for the Manufacturing industry are represented in the top ten challenges for the entire sample. 80% of them are represented in the top 5 challenges for the entire sample.

80% of the top five challenges for the Communication industry are represented in the top 10 challenges for the entire sample, and are among the top 5 as well.

All of the top five challenges for the Wholesale and Retail industry are represented in the top 5 challenges for the entire sample.

Success factors

All of the top five success factors for the Finance/Banking industry are represented in the top 10 success factors for the entire sample. 40% of them are represented in the top 5 success factors for the entire sample.

80% of the top five success factors for the Manufacturing industry are represented in the top 10 success factors for the entire sample. 60% of them are represented in the top 5 success factors for the entire sample.

80% of the top five success factors for the Communication industry are represented in the top 10 success factors for the entire sample. 40% of them are represented in the top 5 success factors for the entire sample.

40% of the top five success factors for the Wholesale and Retail industry are represented in the top 10 success factors for the entire sample. 20% of them are represented in the top 5 success factors for the entire sample.

Benefits

All of the top five benefits for the Finance/Banking industry are represented in the top 10 success factors for the entire sample. 60% of them are represented in the top 5 success factors for the entire sample.

All of the top five benefits for the Manufacturing industry are represented in the top 10 success factors for the entire sample. 60% of them are represented in the top 5 success factors for the entire sample.

All of the top five benefits for the Communication industry are represented in the top 10 success factors for the entire sample. 80% of them are represented in the top 5 success factors for the entire sample.

All of the top five benefits for the Wholesale and Retail industry are represented in the top 10 success factors for the entire sample. 60% of them are represented in the top 5 success factors for the entire sample.

It can be seen from this comparison that the highest ranked challenges, success factors and benefits in the four industries cited are very similarly ranked in the entire population. The reason for this could be that all the participants are at the same stage of electronic commerce and are therefore faced with similar challenges, success factors and benefits. This was shown to be the case in the semi-structured interviews presented in chapter 4.

Not all of the participants in electronic commerce should expect to encounter all of the challenges, identify all of the success factors or to achieve all of the benefits. It will depend on many factors such as the size of the organisation, the environment in which the company operates, the industry it is in, etc. Looking at the data collated from companies in the four industries with the highest response rate, presented on Tables 5.15 – 5.26, it is possible to conclude the following:

The least expected benefits of electronic commerce in the finance/banking and communication industry are reduced inventories and acquisition of a niche market. However, the least expected benefits in the manufacturing and wholesale/retail industries are better knowledge management, reduced inventories and customer loyalty.

The least expected challenges in the finance/banking, communication and manufacturing industries are reaching customers in rural and regional areas, and current electronic commerce legislation. On the other hand, the least expected challenges in the wholesale and retail industry are dealing with intermediaries and current electronic commerce legislation.

The least expected success factors in the finance and banking industry are appropriate packaging and disintermediation. In the manufacturing industry these are comprehensive electronic commerce legislation and appropriate socio-technical policy. In the communication industry the least expected success factors are providing online decision support and comprehensive electronic commerce legislation. In the wholesale and retail industry these are appropriate socio-technical policy and advertising online.

5.13 *Kruskal-Wallis Test for Four Industries*

In order to find out whether the differences for the challenges, success factors and benefits in these four industries, when compared with the challenges, success factors and benefits in the entire sample, are statistically significant, the Kruskal-Wallis tests were performed. The Kruskal-Wallis tests for each of these categories are presented in Tables 5.28, 5.29 and 5.30 on the following pages.

Table 5. 28 Kruskal-Wallis Test for the Challenges

CHALLENGES	Finance/ Banking (Significance)	Manufactu ring (Significance)	Communications (Significance)	Wholesale and retail trade (Significance)	Other (Significance)
Budget	.232	.206	.039	.638	.437
Employee resistance towards e-commerce	.494	.545	.632	.317	.145
Measuring success	.578	.671	3989	.327	.446
Managing change	.827	.853	.878	.480	.214
Security	.876	.724	.325	.317	.259
Technology cost	.672	.192	.392	.317	.572
Web site issues	.189	.352	.607	.318	.655
Software compatibility	.687	.600	.223	.371	.626
Lack of e-commerce infrastructure	.904	.667	.386	.337	.803
Integrating front-end EC to back-end system	.268	.510	.369	.318	.312
Lack of e-business knowledge	.455	.123	.392	.368	.180
Acquiring IT skilled people	.689	.206	.325	.219	.759
Reliable technology vendor	.294	.216	.392	.317	.331
Internet service provider reliability	.195	.962	.259	.221	.310
Obtaining senor managers support	.192	.478	.392	.368	.258
Current e-commerce legislation	.633	.695	.223	.338	.779
Dealing with intermediaries	.568	.352	.223	.317	.921
Customer service	.209	.687	.371	.328	.420
Making business known to users	.613	.580	.223	.342	.212
Reaching customers in rural and regional areas	.506	.733	.564	.452	.266

Table 5. 29 Kruskal-Wallis Test for the Success Factors

SUCCESS FACTORS	Finance/ Banking (Significance)	Manufactu ring (Significance)	Communications (Significance)	Wholesale and retail trade (Significance)	Other (Significance)
Adequate resources (finance &people)	.300	.182	.325	.157	.572
Top management support	.364	.614	.837	.963	.346
Appropriate Sociotechnical policy	.583	.472	.239	.189	.325
Appropriate Organization structure	.131	.721	.221	.480	.112
Appropriate metrics to measure success	.290	.685	.368	.836	.509
Active role of IT department in organization	.287	.610	336	.369	.801
Cross-functional project team	.306	.084	.480	.157	.212
Effective project leader	.361	.796	231	.368	.214
Being visionary	.468	.564	.221	.221	.821
Responsive and flexible towards new strategies	.184	.882	.480	.251	.654
Responsive and flexible to the market	.307	.330	.368	.368	.882
Comprehensive e-commerce legislation	.457	.243	.368	.495	.421
Forming alliances with new partners	.407	.894	.386	.368	.470
Partnership with technology providers	.164	.110	.242	.369	.423
Partnership with service providers	.944	.155	.157	.408	.160
Partnership with suppliers	.870	.231	.368	.480	.687
The use of new technology	.449	.596	.386	.368	.891
Secure transactions	.368	.558	.417	.232	.812
Integrating web site to all business processes	.431	.784	.370	.432	.407
Functional and user-friendly web site	.429	.545	.329	.412	.349
Regular update of the content of the Web site	.731	.545	.390	.287	.172
Web site listed on critical search engines	.368	.348	.733	.268	.417

Online catalogue	.294	.628	.336	.398	.224
Online tracking facilities	.241	.213	.929	.352	.632
Providing online decision support	.460	.169	.480	.480	.392
Online personalized recommendations	.637	.277	.157	480	.687
Allowing FAQ on Web site	.261	.101	.221	1.000	.417
Electronic payment system	.368	.357	.368	.631	.504
Payment via credit card	.514	.259	.352	.353	.112
Advertising online	.665	.829	.582	448	.287
Advert.in newspapers, magazines, radio & TV	.591	.095	.221	.480	.731
Rapid delivery	.468	.896	.480	.458	.615
Appropriate packaging	.317	.538	.486	.221	.759
More personalized customer service	.451	.100	.455	.157	.435
Excelling in communication with customers	.277	.287	.231	.925	.480
Disintermediariation	.801	.264	.380	.462	.368
Availability of new intermediaries for EC	.244	.264	.352	.364	.936

Table 5. 30 Kruskal-Wallis Test for the Benefits

BENEFITS	Finance/ Banking (Significance)	Manufacturing (Significance)	Communications (Significance)	Wholesale and retail trade (Significance)	Other (Significance)
Business efficiency	.233	.273	.223	.457	.607
Retained and expanded customer base	.406	.617	.368	.386	.287
Acquisition of a niche market	.392	.431	.317	.317	.368
Increased sales	.405	.380	.221	.325	.905
Customer loyalty	.167	.555	.195	.325	.135
Reduced operation costs	.797	.519	.472	.368	.392
Reduced inventories	.189	.783	.637	.346	.331
Secure electronic commerce environment	.671	.856	.221	.785	.346
Extended application of new technology	.661	.412	.368	.392	.264
Enhanced skills of employees	.882	.382	.157	.897	.368
Increased automation of processes	.382	.429	.223	.368	.443
Competitive advantage	.247	.673	.368	.386	.462
Improved image	.475	.140	.157	.325	.392
Better knowledge management	.724	.266	.317	.317	.223

The Kruskal-Wallis test suggested that almost all of the variations among industries when compared with the entire sample are of the kind to be expected among samples from the same population. This coincides with the findings from the semi-structured interviews that the majority of participants are at the same stage of electronic commerce and are therefore encountering the same dilemmas.

The only difference, however, that was suggested to be statistically significant was budget as a challenge in the communication industry. The semi-structured interviews findings revealed that the budget was one of the challenges encountered by most companies, but the reason for it to be more of a challenge in one industry than in another was not identified from this research.

It also has to be noted that there were differences, although not statistically significant, across the four groups of industries, which seems to suggest that the focus of different industries is on different issues. It would have been useful to return to interviewed organisations to investigate these further, but due to managers' reluctance to talk about some issues (chapter four), and time and resource constraints, this was not feasible.

5.14 Correlation Analysis

A number of senior managers in charge of electronic commerce in the seven organisations that participated in the semi-structured interviews (Chapter 4) were of the opinion that a relationship between success factors (solutions) and challenges (problems) existed. They also were of the opinion that success factors often influence the benefits achieved in electronic commerce.

These participants were convinced that some relationships did exist, particularly between some of the success factors such as partnership with suppliers, adequate resources and forming alliances, on the one hand and some of the challenges such as customer service, effective hardware, technology cost and software compatibility, on the other.

Similar relationships were also thought to exist between some of the success factors such as more personalised customer service, secure transactions, rapid delivery and

regular update of the content of the web site, on the one hand and some of the benefits such as acquiring new markets, increased sales, retained and expanded customer base, business efficiency and customer loyalty, on the other.

To establish whether the above suggested and/or other relationships between the success factors, challenges and benefits existed, a correlation analysis was conducted using the data acquired from the survey. The correlation analysis indicated that a number of variables were positively correlated as well as statistically significant. With a large number of correlations, however, it was suspected that some of them were significant just by chance. This was the case with "payment via credit card" as a success factor and "reduced inventories" as a benefit of electronic commerce. These two variables were strongly correlated, but in reality it was not likely that they would be logically correlated. This particular correlation has therefore been omitted from the Table 5.32. However, some of the variables such as "adequate resources" as a success factor and "technology cost" as a challenge of electronic commerce were likely to be correlated. The results of correlation analysis also indicated that these two variables were correlated. This particular correlation was among those correlations whose existence was anticipated by the managers in charge of electronic commerce in the semi-structured interviews as well.

In Tables 5.31 and 5.32 only statistically significant correlations between the variables whose relations were indicated to exist in the semi-structured interviews, as well as those that were likely to be logically correlated, were included.

Table 5. 31 Correlation Between Success Factors and Challenges

SUCCESS FACTORS	CHALLENGES	rs values	Sig.
Adequate resources	Technology Cost	.216	.038
Active role of IT department	Integrating front-end EC to back-end system	.238	.026
Cross functional project team	Security	.254	.017
	Lack of EC knowledge	.250	.018
	Dealing with intermediaries	.249	.020
Effective project leader	Security	.268	.010
	Web site issues	.253	.018
	Software compatibility	.228	.030
Forming alliances with new partners	Software compatibility	.218	.043
Partnership with technology providers	Technology costs	.221	.025
	Internet service provider reliability	.227	.048
Partnership with service providers	Technology costs	.244	.035
	Web site issues	.243	.022
	Lack of EC infrastructure	.218	.037
	Integrating front-end EC to back-end system	.267	.010
	Customer service	.259	.013
Partnership with suppliers	Web site issues	.251	.019
	Customer service	.226	.030
Secure transactions	Technology costs	.268	.012
More personalised customer service	Dealing with intermediaries	.261	.018
	Making business known to users	.264	.016
Disintermediariation	Making business known to users	.255	.028

The values of rs correlation coefficient in Table 5.31 indicate positive correlation between success factors and challenges of electronic commerce (varying from +.216 to + .268). The level of significance, as an indicator of the strength of the correlation, indicates that all these correlations are statistically significant (<.05).

Table 5. 32 Correlation Between Success Factors and Benefits

SUCCESS FACTORS	BENEFITS	rs values	Sig.
Active role of IT department	Retained and expanded customer base	.238	.029
Forming alliances with new partners	Increased sales	.270	.011
Partnership with technology providers	Competitive advantage	.258	.015
Partnership with service providers	Retained and expanded customer base	.241	.023
	Customers loyalty	.225	.040
	Reduced inventories	.272	.012
The use of new technology	Reduced inventories	.272	.012
Secure transactions	Retained and expanded customer base	.229	.036
	Increased sales	.247	.022
Integrating web site to business processes	Reduced inventories	.273	.014
Functional and user-friendly web site	Extended application of new technology	.264	.014
	Better knowledge management	.268	.018
Regular update of the web site	Customers loyalty	.254	.021
Web site listed on critical search engines	Acquisition of a niche market	.295	.010
	Increased sales	.245	.032
	Customers loyalty	.278	.017
	Competitive advantage	.249	.030
	Better knowledge management	.265	.025
Online catalogue	Increased automation of processes	.244	.025
Online tracking facilities	Customers loyalty	.257	.024
	Improved image	.285	.012
	Better knowledge management	.266	.023
Providing online decision support	Increased sales	.241	.025
	Customers loyalty	.273	.013
	Improved image	.240	.031
Online personalised recommendations	Enhancing skills of employees	.290	.011
	Improved image	.229	.045
Allowing FAQ on Web site	Retained and expanded customer base	.250	.026
	Acquisition of a niche market	.265	.023

Payment via credit card	Customers loyalty	.242	.026
Advertising online	Improved image	.247	.027
Advertising in newspapers, Magazines, Radio, TV, etc.	Competitive advantage	.231	.032
Rapid delivery	Business efficiency	.267	.013
Excelling in communication with customers	Retained and expanded customer base	.231	.049

The values of rs correlation coefficient in Table 5.32 indicates positive correlations between success factors and benefits of electronic commerce (varying from + .225 to + .290). The level of significance indicates that all these correlations are statistically significant (<.05).

5.15 Conclusion

Major findings from the analysis presented in this chapter are:

- The response rate from top 500 Australian companies was satisfactory.
- The major challenges encountered by participating companies included: integrating front-end EC to back-end system, technology cost, lack of e-commerce knowledge, managing change, and acquiring IT-skilled people.
- The major success factors identified included: effective project leader, secure transactions, rapid delivery, top management support, and more personalized customer service.
- The major benefits achieved included: improved image, competitive advantage, business efficiency, increased automation of processes, and customer loyalty.
- A correlation between success factors and both challenges and benefits of electronic commerce was established.
- The highest response rates were from finance/banking, manufacturing, communication and wholesale/retail industries

CHAPTER SIX
FINDINGS

6.1 *Introduction*

This chapter presents the key findings of the research based on the analysis of the interviews and the survey results.

6.2 *Challenges of Electronic Commerce*

The key findings with regard to electronic commerce challenges, divided into technological, managerial, business and other, are presented in the following sections.

6.2.1 Technological Challenges

Integrating front-end electronic commerce to back-end systems

The interviews, presented in Chapter four have revealed that integrating front end electronic commerce to back end systems has played an important role in electronic commerce. However, it has been costly for a number of reasons:

- A cost identified by one manager was that "the business practices and the company's entire business had to be rethought and examined for what could be simplified"(c).
- Companies have a lot of complex business roles with different costs for different jobs they perform, and so forth. Thus it is quite expensive to develop a company's Internet technology to conduct existing business practices.
- Integration problems were identified, along with "expenses in tying systems together"(c).

Table 5.6 presented the mean value for anticipated integration of front-end electronic commerce to back-end systems as a challenge in electronic commerce. This was slightly higher than the mean value for the same challenge encountered. The Sign test represented in Table 5.7, indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this challenge.

Technology cost

According to the interviews, the technology cost for some companies could be the single most expensive item. Every company wants to minimise the cost as much as possible, but the difficulty very often is that new technology is released very quickly. The interviews also revealed that for some companies the technology cost will continue to rise as the level of sophistication rises. LaPlante (1997) is of the opinion that for many businesses technology cost is a big challenge and for some it is just too great.

As demonstrated in Table 5.6, the mean value for anticipated technology cost as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7, indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Therefore, it is possible to conclude that the surveyed companies underestimated the magnitude of this challenge.

Lack of electronic commerce infrastructure

The interviews presented in Chapter four revealed that in general this challenge was not a crucial issue. For some it was just a matter of allocating, as a priority, the job of assigning the problem of lack of electronic commerce infrastructure to the electronic commerce unit and asking them to undertake the necessary steps. For others, however, the biggest limitation was the lack of quality of some Internet Service Providers and the speed of the network. As described by one manager "the problem is that everyone is at version one of electronic commerce"(b). On the other hand, according to the literature, this challenge was seen as an inhibitor of electronic commerce (Hoffman et al, 1999).

According to Table 5.6, the mean value for anticipated lack of electronic commerce infrastructure as a challenge in electronic commerce was slightly lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7, indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this challenge.

Security

The interviews revealed that many customers, for example, are still reluctant to use credit cards online because of security issues. However, "the last thing the company needs is a reluctant and hesitant customer"(a), was the response of one manager. Some of the interviewees were of the opinion that "the security was going to take the next step as soon as the organisations included these issues in their company policies and as soon as it became a company-driven and not technology-driven event"(b). Security is even more important if a company's site is highly attractive for hacking. Because of the nature of electronic commerce, companies have to remain very pro-active in security measures. It is suggested in the literature that the degree of importance of security in electronic commerce is set at the highest level and that businesses must address this challenge seriously (Koved, 2001).

As presented in Table 5.6 the mean value for anticipated security as a challenge in electronic commerce was slightly higher than the mean value for the same challenge encountered. The Sign test represented in Table 5.7, indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, the conclusion that can be drawn is that the surveyed companies correctly estimated the magnitude of this challenge.

Measuring success

The interviews in Chapter four revealed that "measuring success" in electronic commerce was a challenge because it was still new to the business. Until recently, success was measured in traditional ways, like measuring changes in cost bases, sales and productivity. However, because not all legacy management measures apply to electronic commerce, it is very difficult to measure success in this area. Success for some, at the moment, just means getting all the brands into the market and established. Making a profit, however, is going to be a measure of success later on. Delivering a budget without a loss was considered as a success for others.

Table 5.6, presented in Chapter five, shows that the mean value for anticipated measuring success as a challenge in electronic commerce was slightly lower than the mean value for the same challenge encountered. The Sign test represented in Table

5.7, indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, we can conclude that the surveyed companies correctly estimated the magnitude of this challenge.

Software compatibility

According to the interviews, it took some companies about a year to integrate software bought from overseas into their system. Others had problems bringing together several different systems under one common tool key and ensuring that each of the business units used standardised software. Furthermore, in some cases the software problems were mostly with the legacy system. If the company was a global company, however, the problem was developing software standards that applied globally, and in that case it was about getting common agreement on the process of managing the development, rather than a problem of compatibility or installing the software. The semi-structured interviews also showed that, for some companies, it was almost the single biggest problem next to fulfilment.

As described in Table 5.6, the mean value for anticipated technology cost as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. The conclusion that can be drawn is that the surveyed companies underestimated the magnitude of this challenge.

Web site issues

The interviews presented in Chapter four revealed that, for some companies, there were no specific issues with their web site, and it still was a learning curve. One of the issues that probably shocked many was the amount of the time that needed to be devoted to maintaining the site, keeping the data up to date, and recording ownership of the information on the web site. At the beginning some companies had problems with web page design, placing an advertisement, registering and composing it, payment and confirmation, etc., which later on became quite straightforward. Some needed greater education about the company's legacy system, and about learning what was required from a commercial web site to make it a place which could generate return visits, and get people to spend money. It is suggested in the literature that web

site issues are a challenge that can significantly influence the success of electronic commerce (Hannon, 1998).

According to Table 5.6, the mean value for anticipated measuring success as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, it can be concluded that the surveyed companies correctly estimated the magnitude of this challenge.

6.2.2 Managerial Challenges

Lack of electronic commerce knowledge

Lack of electronic commerce knowledge, according to the interviews, could be a real challenge because in the words of one manager "it is the area that is changing all the time"(f). The fact that different people have a different understanding of what electronic commerce actually is, makes this challenge even more difficult. The lack of electronic commerce knowledge was the reason why a series of workshops were held by many companies in order to give employees a common understanding of the terminology, what the companies were doing in electronic commerce and why they had decided to involve themselves in it.

Table 5.6, presented in Chapter five, revealed that the mean value for anticipated lack of electronic commerce knowledge as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. On that basis the conclusion can be drawn that the surveyed companies underestimated the magnitude of challenge.

Managing change

The interview findings revealed that managing change could be a great challenge from two angles; from the technology perspective, because the technology was always changing so the company had to keep up to date with the latest products, software and standards; from the business perspective, because there were constant changes in business requirements, since the environment was very dynamic and the company had

to balance constantly. The semi-structured interviews also revealed that, apart from being difficult generally, this challenge was even more difficult for companies who happened to be conglomerates. In such cases the companies were very much a loose federation of businesses, and as the introduction of electronic commerce was a horizontal activitiy that went across businesses it could be very hard to manage.

According to Table 5.6, the mean value for anticipated measuring success as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, it can be concluded that the surveyed companies correctly estimated the magnitude of this challenge.

Acquiring IT-skilled people

It was identified from the interviews that to acquire skilled people with IT knowledge in the area of electronic commerce could be a challenge, because skilled people were hard to secure and very expensive.

Table 5.6, presented in Chapter five, revealed that the mean value for this challenge anticipated in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. The conclusion that can be drawn on that basis is that the surveyed companies underestimated the magnitude of this challenge.

Obtaining senior managers' support

Some of the interviewed companies acknowledged that it was not an easy task for electronic commerce people to persuade top managers to support a project that was not likely to generate any income for the next few years. Despite that, however, obtaining senior managers' support was not revealed as a challenge in interviews. This finding was confirmed by the survey data. The literature had however revealed that obtaining senior management support can be a challenge caused by managers' unawareness of benefits of electronic commerce, paranoia over security matters, etc. (Popje, 1998).

As presented in Table 5.6, the mean value for anticipated obtaining senior managers' support as a challenge in electronic commerce was higher than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this challenge.

Employee resistance towards e-commerce

The interviews with senior managers in charge of electronic commerce showed that the vast majority of companies did not have problems, as such, with employee resistance towards electronic commerce. It was more of a problem of interpretation or lack of understanding about what electronic commerce was. Therefore, most of the managers would really call that hesitation more than resistance. However, in a minority of cases, in the initial stage, when no-one really understood what was involved, companies had very little employee resistance. Later on, in a few cases, because of the money invested in electronic commerce, there was resistance to the amount of money spent on it. Hoffman et al, (1998), are of the opinion that this issue is best dealt with by motivating and training people so that they are fully aware of electronic commerce issues.

Table 5.6 revealed that the mean value for anticipated employee resistance towards e-commerce as a challenge in electronic commerce was higher than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Thus the conclusion can be drawn that that the surveyed companies overestimated the magnitude of this challenge.

6.2.3 Business Challenges

Budget

The interviews revealed that budgeting for electronic commerce could be difficult, often because traditional models of IT development changed significantly with the speed of the Internet. Budgeting could also be difficult because it had to be done with regard to many constraints such as how many people were going to work on

the project, what the company was trying to achieve, what the company needed to do and what functionality it was going to have. Most importantly, companies had to make sure that with any expenditure on electronic commerce there needed to be a responsible pay-back.

Budget, from the point of view of some of the interviewed companies, could be a challenge for two reasons; firstly, because there was not enough money for what the company wanted to do, and secondly because the company's budget was developed well in advance of the period it was directly operating in. Therefore finding funds for some of these new strategies was often very difficult. On the other hand, in terms of budgeting in a globally-driven process, the biggest problem was cost allocation from the parent company.

As seen in Table 5.6, the mean value for anticipated measuring success as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. On that basis the conclusion can be drawn that that the surveyed companies correctly estimated the magnitude of this challenge.

Making business known to users

It was clear from the interviews that were conducted that making the business known to the users was not perceived as a major challenge. Some of the companies were aware that not enough attention was paid to this issue and were working on couple of projects, which were intended to focus more on it. Part of that was a large advertising campaign intended to explain to users what the company had been doing recently.

According to Table 5.6, the mean value for anticipated making business known to users as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this challenge.

Customer service

Table 5.6 presented the mean value for anticipated customer service as a challenge in electronic commerce, which was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 determined that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. On that basis the conclusion can be reached that the surveyed companies correctly estimated the magnitude of this challenge. Furthermore, it confirmed the semi-structured interview findings which showed that companies did not have appreciable problems with customer service. It is suggested in the literature that good customer service in the area of electronic commerce can provide quality information for customers beyond their expectations (Primoff, 1998).

Reliable technology vendor

Interviews revealed that a reliable technology vendor, as a challenge for some companies, had two aspects. The first related to the company's base infrastructure, hardware and software, and, typically there were no problems if the company purchased from vendors with a lot of experience. Secondly, the company had a problem when it needed to develop a web site, and had problems finding a good developer. Others, however, had problems through having a lot of technology providers. For them the problem was how to consolidate these into just one or two technology providers. Once, the consolidation was achieved, however, it was possible to say whether or not they were reliable.

Table 5.6 revealed that the mean value for anticipated technology cost as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Therefore, it is possible to conclude that the surveyed companies underestimated the magnitude of this challenge.

Internet service provider reliability

According to the interview findings, internet service provider reliability was not a problem for some companies because they had established good relationships with providers such as Telstra, Optus, Worldcom, etc. For global companies, however, the

challenge with the Internet service provider lay in the fact that it took some time for the parent company to find the hosting environment.

As seen in Table 5.6 the mean value for anticipated Internet service provider reliability as a challenge in electronic commerce was lower than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was not statistically significant. Therefore, it can be concluded that the surveyed companies correctly estimated the magnitude of this challenge.

Dealing with intermediaries

The interviews presented in Chapter four showed that companies generally did not have problems with their intermediaries. Some of their better experiences included making sure that "there was only one group of people dealing with intermediaries so that this process could be well tuned"(g).

According to table 5.6, the mean value for anticipated employee resistance towards e-commerce as a challenge in electronic commerce was higher than the mean value for the same challenge encountered. The Sign test represented in table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. From that we can conclude that the surveyed companies overestimated the magnitude of this challenge.

Reaching customers in rural and regional areas

It was seen in the interviews that problems with reaching the customers in rural and regional areas depended on the business. While there were no problems with technical goods, this was an issue for supermarkets because of refrigerated cold chain delivery. For businesses already set up nationally there were also no problems. The interviews also revealed that many companies had a strategic plan to reach customers in regional and rural areas and were aware that a fully operational web site was necessary to achieve this.

In Table 5.6 the mean value for anticipated technology cost as a challenge in electronic commerce was lower than the mean value for the same challenge

encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Therefore, the conclusion can be drawn that the surveyed companies underestimated the magnitude of this challenge.

6.2.4 Other Challenges

Current e-commerce legislation

In the literature it is suggested that until comprehensive legislation concerning electronic commerce is in place people will be reluctant to exploit its opportunities (Hoffman et al, 1999). According to the interviews that were conducted, the majority of companies did not have a problem with electronic commerce legislation. However, according to some of the participants, "the law itself had difficulties in dealing with technology which was growing exponentially"(d).

In contrast with these findings, the survey shows a different picture. Table 5.6 shows that the mean value for anticipated current e-commerce legislation as a challenge in electronic commerce was higher than the mean value for the same challenge encountered. The Sign test represented in Table 5.7 indicated that the difference between the anticipated and encountered mean values of that challenge was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this challenge.

6.3 *Electronic Commerce Success Factors*

The key findings with regard to electronic commerce success factors, divided into technological, managerial, business and other, are presented in the following sections.

6.3.1 Technological Success Factors

Secure transactions

It was revealed in the interviews that some of the companies were transferring large sums of money over the Internet, one with over a hundred million dollar trade. Therefore it was very important to them to have secure transactions, and ultimately, it was all about risk and related costs. Companies were aware that from their customers'

perspective, secure transactions are very important as well so they had to make sure that their customers were reassured about online transaction security. This is a fundamental cornerstone of electronic commerce, since the vast majority of people would say that they are not confident about giving their credit card number online (Liao and Tow, 2001). Some companies' experience, however, showed that customers were ready to reveal their credit card number when buying from trusted companies.

From Table 5.9 it can be seen that the mean value for anticipated secure transactions as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Thus it can be concluded that the surveyed companies underestimated the magnitude of this success factor.

Regular update of the content of the Web site

For some of interviewed companies the whole purpose of having a web site was for its content to be regularly updated, as this helped companies to become and stay dynamic and to attract customers. If the company did not update its web site often enough, there was no reason for having it. Updating the content of the Web site, for some companies, particularly if it concerned something dynamic such as the product price, was extremely important. In such cases it had to be updated very regularly. The quality of the content, and the frequency of the updates were very important. In the early days companies changed their web site every 6 months, but later on it was done 6 times a day at some companies. "Customers are very critical and if you don't update your web site they might not come back" (e).

Table 5.9 revealed the mean value for anticipated regular update of the content of the Web site as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. From that we can conclude that the surveyed companies correctly estimated the magnitude of this success factor.

The use of new technology

The use of new technology as a success factor was important for many surveyed companies because it was the enabling factor for new business opportunities. If the company did not take up new technology, someone else would, and it might cost the company a lost business opportunity. However, it came at a cost. The interviews also revealed that for some companies, the use of new technology as a success factor was probably where they were most cautious. They were not sure what the delivery channels were going to be in the future.

According to table 5.9, the mean value for anticipated use of new technology as a success factor of electronic commerce was higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Functional and user-friendly web site

Some of the interviewed companies thought that the web site had to be functional and user-friendly because first impressions are always important. The web site is the interface with the customer and if potential customers did not understand it or were not able to easily access the information, they would go somewhere else and not return. For others, however, the content is the driver, functionality comes second and the web site design comes third. The semi- structured interviews also revealed that a functional and user-friendly web site depended on what the company's market was. Apart from being functional, it had to add value to users to make them come back. If it was not functional and user-friendly people would still use the phone. For the company this would mean maintaining all its customer service over the phone. Consequently, the company's expected savings from electronic commerce would not be realised. It was also revealed from the literature that a functional and user-friendly web site is a challenge for companies' success (Riggins, 1999 and Liu and Arnett, 2000).

As presented in Table 5.9, the mean value for anticipated functional and user-friendly web site as a success factor in electronic commerce was lower than the mean value for

the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. On that basis we can conclude that the surveyed companies underestimated the magnitude of this success factor.

Integrating the web site to all business processes

There was no doubt that, for many of participants in the interviews, integrating their web site into the rest of their business functions was a success factor. However, apart from the fact that it takes a long time to integrate a web site properly, it is very hard to judge its success because the majority of companies are doing it for the first time and they have no basis for comparison with the outside world. In order to get it done properly, every company needs to spend quite a bit of time and money and to have a long term vision of what it wants to achieve. However, not all of this has to be in place in the early stages and if the company has the right people in place it was much easier. McLure (1998) is of the opinion that integrating web site sales with all processes is necessary.

According to Table 5.9, presented in Chapter five, the mean value for anticipated integrating web site to all business processes as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between anticipated and achieved mean values of that success factor was not statistically significant. From that we can conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Payment via credit card

Payment via credit card, since it is much quicker than traditional payment methods, is now a success factor. In the opinion of some of the interviewed companies, it is going to play a major role in financial transactions for a long time to come because it is going to take a while before payment via digital cash is widely accepted in Australia. Some of the companies, however, have introduced payment through mobile EFTPOS at the door, so that payment can be made without a credit card. It is suggested in the literature that payment via credit card is the most common payment method in electronic commerce (Panurach, 1996).

Table 5.9 shows that the mean value for anticipated payment via credit card as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Online tracking facilities

The interviews with some of the participating companies revealed that online tracking facilities allowed a company to know its potential customers, to find out who was navigating its site, what they were looking for, and how the company could push information to them. Apart from improving the company's image, it showed its willingness and ability to use new technology. The main feature of the online tracking facilities was that the company could gain an insight into what customers wanted without having to pay for the information.

As can be seen from Table 5.9, the mean value for anticipated online tracking facilities as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and achieved mean values of that success factor was not statistically significant. The conclusion that can be drawn is that the surveyed companies correctly estimated the magnitude of this success factor.

Appropriate metrics to measure success

Appropriate matrices to measure success were proven as a success factor in some of the participating companies. Electronic commerce was still a new area and many found it hard to measure success properly. Because of that, many were inclined to use the traditional method of measuring success. For them there was only one appropriate way to measure success; it had to show how the company can make money out of the project.

According to table 5.9, the mean value for anticipated appropriate matrices to measure success as a success factor of electronic commerce was lower than the mean value for

the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Electronic payment system

The interviews that were conducted showed that an electronic payment system was quite important since it enabled important sales, and it was also very important that the company could receive its electronic payments across web sites. The literature also suggests that it is very important for electronic commerce that an inexpensive and secure electronic payment exists (Stewert, 1998). In relation to Table 5.9, the mean value for anticipated electronic payment system as a success factor of electronic commerce was slightly higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Accordingly, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Allowing FAQ's on Web site

In the interviews that were conducted, frequently asked questions on a web site, as a way of getting closer to customers and at the same time providing the basis for keeping customers, were seen as an important success factor capable of taking the users' experience to another level. Allowing FAQ's on a web site reduced the company's telephone costs, at the same time giving customers an opportunity to have their questions answered very quickly. However, in some companies' experiences, FAQ's were only at the beginning stage. Over time, it was envisaged that they would start building in FAQ's and getting a greater understanding of what the customers wanted. Riggins (1999) is of the opinion that frequently asked questions support electronic commerce by being "open" 24 hours a day.

In Table 5.9 the mean value for anticipated allowing FAQ's on the web site as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor

was statistically significant. Consequently, it is possible to draw the conclusion that the surveyed companies underestimated the magnitude of this success factor.

Online catalogue

An online catalogue, as a source of information on the organisation's product, was something customers expect. The semi-structured interviews also revealed that an online catalogue was something that customers looked for, to check out features, brands, etc. Once customers were accustomed to that, the online catalogue could create a certain level of loyalty as well. Even though it was still not possible to sell many things through the catalogue, it represented 25% of some of the companies' businesses. It is suggested in the literature that many companies embrace online catalogues because they simplify searches (Baron et al, 2000).

As seen in Table 5.9, the mean value for anticipated online catalogue as a success factor of electronic commerce was lower than the mean value for the same success factor identified. Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Web site listed on critical search engines

The interview findings showed that, since many companies wanted to be on as many search engines as possible, it seemed to be quite an important success factor. In the view of some interviewees, if the company was not registered with the main search engines, and if it did not have its key words registered with them, it would be missing customers. Such listings gave a company a certain degree of competitive advantage as well. Furthermore, if the company's web site was not on the main search engines and the company relied only on people who knew its web site, that was not good enough for business. Some companies were spending a lot of money to make sure they were among the top 10 positions on critical search engines, but others did not think it was so important.

In accordance with Table 5.9, the mean value for anticipated web site listed on critical search engines as a success factor of electronic commerce was higher than the mean

value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. From the data we can conclude that the surveyed companies overestimated the magnitude of this success factor.

Online personalised recommendations

According to some interviewees, online personalised recommendations represented one of the real powers of the web. It was almost like putting a display in a store where the company tries to focus people's attention on new things. The literature also suggests that online personalised recommendations allow companies to build special customer profiles so that they can target them more effectively (Riggins, 1999). In Table 5.9 the mean value for anticipated online personalised recommendations as a success factor of electronic commerce was slightly higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10, indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. On that basis, the conclusion that the surveyed companies correctly estimated the magnitude of this success factor can be drawn.

Providing online decision support

The interviews showed that providing an online decision support system is acknowledged as a success factor,. Online decision support could make the difference when it came to deciding whether to make a purchase with the company that had it in place or with the one that had not. In order to support their electronic commerce, some companies introduced specific online decision support systems in the form of interest rate calculators. A variety of calculations for derivatives, options, debt markets, etc., were often called the company's analyst tools online.

As stated in Table 5.9, the mean value for anticipated providing online decision support as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Consequently, it is possible to conclude that the surveyed companies underestimated the magnitude of this success factor.

6.3.2 Managerial Success Factors

Effective project leader

The interviews revealed that an electronic commerce model is no different from any other business model. Therefore, as the leader of electronic commerce at an interviewed company said "because nothing happened unless there is an evangelist", the role of a project leader is critical. The project leader had to look at the project from both a strategic and an operational point of view. He/she must be able to see what is happening now, what might happen in the future and what competitors are doing. The job of the leader was to look at the electronic commerce from an overall perspective and determine what is achievable from the company's point of view. Folit (2000), is of the opinion that strong leader is a necessity in the field of electronic commerce.

An effective project leader is very critical in market timing as well. In today's environment, when companies are under more and more time restraints, each company has to have a project manager who can get the project completed on time.
In Table 5.9 the mean value for anticipated effective project leader as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. In accordance with that, we can conclude that the surveyed companies underestimated the magnitude of this success factor.

Top management support

From the interviews it was possible to conclude that top management support was definitely one of the biggest success factors. The company could have an excellent electronic commerce strategy but if it did not have top management support, it would not work. Without top management support there would be no budget for electronic commerce and consequently it would not exist. As management learned more about electronic commerce the more they tended to do about it.

In some cases, some senior managers had conservative views and they had to be sold on the benefits of electronic commerce as a strategy. This task, however, was to some extent made easier because of the belief that electronic commerce itself would change

business processes through collapsing the supply chain and the sale cycle, etc. In general, top management support was revealed to be very critical, because managers were the people who decided priorities and made decisions about money and people. For the same reasons, top management support was even more important when the company was a conglomerate.

Table 5.9 presented the mean value for anticipated top management support as a success factor of electronic commerce, which was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. From that we can draw the conclusion that the surveyed companies correctly estimated the magnitude of this success factor.

Partnership with technology providers

Partnerships with technology providers were very important for some companies because those were the areas where they needed a lot of support. Many were of the opinion that without this partnership, there was always the possibility of missing out on opportunities. The company needed a technology provider who it trusted, who would keep its technology and software updated, and who would boost its chances of gaining a better image among its customers. Partnership with technology providers was critical because technology itself had become so specialised and packaged. This view is supported by Coul;ston (1999), who is of the opinion that technology is becoming more and more advanced and companies need these partnerships to keep up with it.

In Table 5.9 the mean value for anticipated partnership with technology providers as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. On that basis we can conclude that the surveyed companies underestimated the magnitude of this success factor.

Cross-functional project team

A cross-functional project team, as a means of achieving the broadest possible involvement across all disciplines and cooperation across different departments, was necessary in every company. This ensured that electronic commerce got support from any department it needed. " A cross-functional project team may include marketing, logistic, customer service, sales, portfolio managers, etc. All together they can create a team and draw from each area to undertake the company's daily business" (a). In many interviewed companies there was a realisation of the importance of having cross-functional project team in order to get input from different parts of the company. In some companies that was a reflection of the people who were selected for the roles of department leaders more than anything else.

According to Table 5.9, the mean value for anticipated cross-functional project team as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Active role of IT department in organisation

The role of the IT department was important, because in many companies there was a feeling that every business should own the process of defining what they wanted. The IT department, therefore, had a very important role to play in making sure that the traditional system for developing processes was followed. The IT department had to help the business at all times and be pro-active. Its role was also to get all staff involved together to push electronic commerce throughout the business.

Table 5.9 shows that the mean value for anticipated active role of IT department in organisation as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.1 indicated that the difference between the anticipated and identified mean values of this success factor was not statistically significant. Consequently, the conclusion that can be drawn is that the surveyed companies correctly estimated the magnitude of this success factor.

Partnership with service providers

The interviews showed that a partnership with the service providers, especially in terms of business-to-business electronic commerce, was seen in some companies as a very important success factor. Service providers were absolutely crucial for the company's success in the sense that they could support the company's reliability and image, which in turn helped the company to retain or even expand its customer base. Basically reliability and quality in a provided service were the qualities companies were looking for.

In Table 5.9 the mean value for anticipated partnership with service providers as a success factor of electronic commerce was slightly higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Accordingly, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Appropriate Organisational Structure

In the interviews, organisational structure was revealed as one of the success factors that, according to one manager, made it easy to "map out anything" (b). Appropriate organisational structure as a success factor was even more important in the electronic commerce domain, since it needed support from other departments, regardless of the fact that many of the jobs were automated. "Organisational structure is very organic and the company doesn't necessarily need the structure in the first place because it tends to grow first and worry about structure later. That's fine with small organizations and in initial stages. Later on the structure grows very naturally" (c). Some companies created an organisational structure from their own internal people, while others had just gone through a second corporate restructure to align themselves with the customers. For the latter, the aim was to make the company customer-focused.

According to table 5.9, the mean value for anticipated appropriate organisational structure as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in table 5.10 indicated that the difference between the anticipated and identified mean values of that success

factor was statistically significant. Therefore, it is possible to conclude that the surveyed companies underestimated the magnitude of this success factor.

Partnership with suppliers

Because it could influence many things, such as customer loyalty, customer base, efficiency, etc. (LaPlante, 1997), a partnership with suppliers was very important for the interviewed companies. It was not unusual for some companies to actually lock in a partnership with them. Companies were aware that if the link with the suppliers was broken in any way, the seller was not going to be efficient, its inventories were not going to be sufficient, and the company might lose customers.

Every company needed to know who was reliable and who could deliver on time and at the right cost. It speeded and simplified things if the company had a good relationship with its suppliers, and especially in areas such as hardware, network, support, etc. a reliable supplier was very important. Furthermore, as a general rule, it was better to have a supplier who was reliable but not cheap, than one who was cheap but not reliable.

In Table 5.9 the mean value for anticipated partnership with suppliers as a success factor of electronic commerce was slightly higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. On this basis it can be concluded that the surveyed companies correctly estimated the magnitude of this success factor.

Forming alliances with new partners

The interviews revealed that the World Wide Web and electronic commerce made it possible to form alliances many companies would never even have considered 10 years ago. The alliances some companies formed were designed more to enable technology rather than as comprehensive business alliances. For many companies, however, forming alliances with new partners represented an important success factor and part of their strategy. Those alliances could, for example, take the form of an association with an insurance company or other complementary suppliers in the industry. It is suggested in the literature that forming alliances allows companies to

deliver products and services quickly, expand their markets and share risks (Segil, 2000).

From Table 5.9 we can see that the mean value for anticipated forming alliances with new partners as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Thus, from the data available we can conclude that the surveyed companies underestimated this success factor significantly.

Appropriate Sociotechnical policy

According to the semi-structured interviews, an appropriate sociotechnical policy balanced the social behaviour and the skills of employees, and was about choosing people for the roles that suited the company's objectives. In other words, the right combination of personalities and the core skills needed was desirable as argued by one manager: "If the company had the right team at the beginning it tended not to worry about this policy, till it grew to such a size that it needed that in place" (c).

In Table 5.9 the mean value for anticipated appropriate sociotechnical policy as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. On that basis the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this success factor.

6.3.3 Business Success Factors

Rapid delivery

Most of the interviewed companies agreed that rapid delivery was among the key success factors for electronic commerce. As one manager said "It is especially important nowadays in an instant world, when people expect fast services, since technology advancements have made it possible" (a). Furthermore, delivering on time was something everybody expected from electronic commerce in particular. The semi-structured interviews also revealed that rapid delivery was going to become more and more critical as logistic companies became better and better, as warehouses

of wholesale goods also improved, and as customers' expectations grew. Thus, companies had to meet the customers' expectations if they were to succeed. Rapid delivery could also give companies an edge over their competition and take pressure off their inventories (Rutter and Southerton, 2000).

As seen in Table 5.9, the mean value for anticipated rapid delivery as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Accordingly, it can be concluded that the surveyed companies underestimated the magnitude of this success facto.

More personalised customer service

Many companies that were interviewed concluded that there was a very high correlation between sales volume and personalised customer service. There was a real need to understand who the company's customers were so that the company could personalise its message to them. The semi-structured interviews also revealed that many companies were trying to personalise every one of their retail and business customers. The very fact that a company's customers were able to purchase products easily as a result of introducing electronic commerce was seen by some as better and more personalised customer service. More personalised customer service was embodied for some in allowing customers to place an advertisement any time they wanted, and for others in the availability of rapid responses to posted questions. According to Pitturo (1999) and Mohadeven (2000), more personalised customer service is a very important success factor because it generates many benefits through its ability to deal with customers more personally.

According to table 5.9, the mean value for anticipated more personalised customer service as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Therefore, it is possible to conclude that the surveyed companies underestimated the magnitude of this success factor.

Responsiveness and flexibility to the market

The semi-structured interviews showed that in electronic commerce, as in any other business, there was always a need to predict where the market was going to be and what was going to be the best strategy. One of the encouraging things, as revealed in semi-structured interviews, was that people who were willing to accept the challenge of participating in this new area were not being criticised if they made the wrong decisions for the right reasons and learned from that mistake.

From Table 5.9 we can observe that the mean value for anticipated responsiveness and flexibility to the market as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Consequently, the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this success factor.

Excelling in communication with customers

Many interviewed companies were realising the importance of excelling in communication with customers as a success factor. By being able to manage communications with their customers, using a traditional mass media approach, some of them had excelled in their communication with customers. Excelling in communication with customers, by itself, improved customers' experiences and kept them with the company. Furthermore, this was one of the effective ways to adapt the company's site to customers' needs and to overcome problems with customer service.

On a more practical level, however, it was most important that when a company was dealing with customers in electronic commerce, it dealt with them as it would have or should have in its normal business. For example, if delivery was going to be late customers needed to know that. A system which advised the customer (via e-mail, for example), as quickly and as responsibly as possible, that there were some problems with regard to delivery was ideal.

In Table 5.9 the mean value for anticipated excelling in communication with customers as a success factor in electronic commerce was lower than the mean value

for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference the between anticipated and identified mean values of that success factor was statistically significant. Thus it can be concluded that the surveyed companies underestimated the magnitude of this success facto.

Responsiveness and flexibility towards new strategies

The interviews revealed that being responsive and flexible towards new strategies was an important factor. In reality it was a matter of being willing to try and change, and to constantly look at things differently. Many companies' policies were that "there was no pressure if something went wrong, because there was no right way of doing things. The only right way was if it was proved that this was the right way" (c). Being responsive and flexible towards new strategies was critical because business models and technologies are changing rapidly. The company has to be in a position to change its business models and underlying technologies very quickly. On the other hand, the markets changed as well, and any new technology could mean that a company's competitors could take its place in the market.

According to Table 5.9, the mean value for anticipated responsiveness and flexibility towards new strategies as a success factor of electronic commerce was slightly higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Therefore, it is possible to conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Advertising in newspapers, magazines, radio & TV

Advertising in newspapers as a way of reaching the customers, especially in remote and regional areas (Zarowin, 1999), was important to the interviewed companies. Advertising in newspapers, magazines, Radio, TV, etc. was, in the view of some participants, a more effective way to get people to the web site than advertising online, because it was more focused. It was a fundamental belief at many companies that "every single piece of communications, which they made with their customers, at least needed to mention the web presence, because it was as important apart of doing

business as to have a phone number there. It would not, however, have the same impact as a phone number but it was a good discipline to get into" (g).

Table 5.9 shows that the mean value for anticipated advertising in newspapers, magazines, radio and TV as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Accordingly we can conclude that that the surveyed companies correctly estimated the magnitude of this success factor.

Appropriate packaging

According to the interviews, appropriate packaging was very important for some companies because in some cases people could not see what they bought on the Internet. Sellers had to package the product as if the customers were getting something tangible and make customers feel comfortable with the product. It was also important that the product arrived to the customer in a saleable state. Furthermore, in same cases appropriate packaging could make the difference when it came to making a decision about whether to make a purchase or not.

As seen in Table 5.9, the mean value for anticipated appropriate packaging as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Thus the conclusion that can be drawn is that the surveyed companies underestimated the magnitude of this success factor.

Disintermediariation

Disintermediation was not revealed in the interviews presented in chapter four as a critical success factor. Although many companies realised that times had changed and that electronic commerce offered an opportunity to bypass the old intermediaries, it did not happen very often. One reason for this was the existence of satisfactory long-term relationships with their old intermediaries. According to Riggins (1999), the trend towards disintermediation is common in many industries.

According to Table 5.9, the mean value for anticipated disintermediariation as a success factor of electronic commerce was higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this success factor.

Availability of new intermediaries for EC

It was revealed from the interviews that many companies were pleased that they were able to employ new intermediaries they had not worked with before. In order to gain skills in specific areas, or to bring in specialists to ensure that the solution was commercially sound, some companies had to employ new intermediaries. For some, however, the vast majority of new intermediaries were primarily consultants in the area of site development who helped companies to work through this process. Since warehouses were not feasible for many companies, the availability of new intermediaries allowed many to overcome problems with inventories.

Table 5.9 revealed that the mean value for anticipated availability of new intermediaries for EC as a success factor of electronic commerce was higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. From that we can conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Advertising online

The interviews revealed that advertising online gave some companies 7% or 8% of a clearly defined market. In the view of some, no company was going to be a great winner unless it was targeting a very particular market segment online. However, it seemed that for some companies advertising online is not considerable at the moment. According to Minoli and Minoli (1999), advertising online is essential for companies with millions of people using the Internet.

According to Table 5.9, the mean value for anticipated advertising online as a success factor of electronic commerce was higher than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this success factor significantly.

6.3.4 Other Success Factors

Adequate resources (finance and people)

Adequate resources (finance and people) were quite important as a success factor and these applied to money, human resources, the ability to outsource where appropriate, and the ability to have effective hardware, etc. In the opinion of one respondent "the company might have the most effective project leader in the world but if it hasn't got resources it has got nothing" (c). Although many companies said they had minimised costs with electronic commerce, they required adequate resources to make it run efficiently. Overall, many companies were doing their best to provide enough resources for electronic commerce. It was also very important to understand that, if the company could not access resources at the time when it needed them, they were worthless. Therefore "adequate resources, that could be accessed for a quick fix, were of the utmost importance" (g). This view is shared by Dougan (1999).

Table 5.9 showed that the mean value for anticipated adequate resources as a success factor in electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was statistically significant. According to that the conclusion can be drawn that the surveyed companies underestimated the magnitude of this success factor.

Being visionary

The interviews showed that many companies recognised that being visionary was critical for success in electronic commerce, because no company could afford not to be. Management teams had to see and recognise future possibilities and future threats.

If there was no vision, however, " when the time came, its competition might be there and the company's market share would be endangered" (g).

According to table 5.9, the mean value for anticipated being visionary as a success factor of electronic commerce was higher than the mean value for the same success factor identified. The Sign test represented in table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Hence, we can conclude that the surveyed companies correctly estimated the magnitude of this success factor.

Comprehensive e-commerce legislation

During the interviews it was revealed that clearer and more comprehensive electronic commerce legislation needs to be developed if companies are to be more successful in business, and if the electronic commerce environment is to be made more secure. The reason for this is that many of the things that companies are doing online need to be underpinned by legislation.

As seen in Table 5.9, the mean value for anticipated comprehensive e-commerce legislation as a success factor of electronic commerce was lower than the mean value for the same success factor identified. The Sign test represented in Table 5.10 indicated that the difference between the anticipated and identified mean values of that success factor was not statistically significant. Thus we can make a conclusion that the surveyed companies correctly estimated the magnitude of this success factor.

6.4 *Electronic commerce benefits*

The key findings with regard to electronic commerce benefits, divided into tangible and intangible benefits, are presented in the following sections.

6.4.1 Tangible Benefits

Business efficiency

According to the interviews, by introducing a number of initiatives that improve many workload processes within the company and improve its dealings with its customers, many companies have achieved business efficiency. Electronic commerce has allowed companies to achieve business efficiency in many areas of their business.

(Commonwealth of Australia, 1998 and; and Rosen and Howard, 2000). The interviews also revealed that, in the distribution of purchased material for instance, by collapsing some steps in the supply chain, companies saved many dollars by using the Internet. Business efficiency was also achieved by reducing manual time, with the elimination of manual time as the next step. However, it has not happened overnight, but has been achieved in gradual steps. Some companies believed that business-to-business electronic commerce would offer even more business efficiency in the future.

Table 5.12 showed that the mean value for anticipated business efficiency as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Based on that, it is possible to conclude that the surveyed companies overestimated the magnitude of this benefit.

Increased automation of processes

The interviews showed that increased automation of processes had the potential to be one of a company's bigger possible gains. Some companies were focusing on their legacy system to push electronic commerce further and deeper to improve work flow. It is suggested in the literature that in order to survive, companies have to introduce automation into their processes (Begley, 1999). It can be seen from Table 5.12 that the mean value for anticipated increased automation of processes as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. In accordance with that, it is possible to conclude that surveyed companies overestimated the magnitude of this benefit.

Retained and expanded customer base

Many surveyed companies expanded their customer base by virtue of being online and opening themselves up to new markets. Thus, being online and being able to offer electronic business solutions in all senses, not just the financial sense, dramatically expanded a company's customer base. In many cases companies have retained their

customer base and were experiencing that a "lot of people who have no previous position or experience with us were becoming our new customers"(d). For some companies, with regards to terminology, both a retained and an expanded customer base were important. The key word however was 'retaining', and this was more about market protection. The literature also suggests that electronic trade enables companies to expand their customer base without increased costs (Carr, 1997).

In accordance with Table 5.12, the mean value for anticipated retained and expanded customer base as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this benefit.

Increased sales

Increased sales, as the semi structured interviews showed, were among the benefits achieved by companies that were engaged in electronic commerce. It is suggested in the literature that increased sales are among the first tangible benefits achieved by companies involved in electronic commerce (Weil and Broadbent, 1998; Leland, 2000). The fact was that "if the company didn't increase sales, its losses were someone else's incremental" (e). Overall, the majority of companies expected the right market share. Looking at Table 5.12, we can observe that the mean value for anticipated increased sales as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated `that the difference between anticipated and achieved mean values of that benefit was statistically significant. In accordance with that, the conclusion can be drawn that the surveyed companies overestimated the magnitude of this benefit.

Extended application of new technology

The interviews presented in Chapter four revealed that extended application of new technology was a benefit to companies because it gave them the opportunity to go into new business models with prolonged use of the new technology. Table 5.12 showed that the mean value for anticipated increased sales as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test

represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Consequently, we can conclude that the surveyed companies overestimated the magnitude of this benefit.

Reduced operation costs

It was seen from interviews that some companies reduced their operation costs by several million dollars by engaging in electronic commerce. For some this was achieved by reducing steps in business processes, for others by reducing the interaction between departments in the organisation. For many, however, it is too early to tell by how much operation costs have been reduced. Furthermore, according to the literature, these reduced operation costs can be passed on to customers (Nickson, 2000). According to Table 5.12, the mean value for anticipated reduced operation costs as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and encountered mean values of that benefit was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this benefit.

Acquisition of a niche market

Acquisition of a niche market was another benefit of electronic commerce achieved by some companies that was revealed in the interviews. However, some of the prerequisites for achieving this benefit were moving towards satisfying the niche price and developing niche products. Riggins (1999), is of the opinion that electronic commerce, because of its very nature, is very suitable for companies that wish to become niche players. As seen in Table 5.12, the mean value for anticipated acquisition of a niche market as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was not statistically significant. On that basis the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this benefit.

Reduced inventories

The interviews revealed that companies could reduce their inventories as a result of introducing electronic commerce by being able to supply their inventories much better, and also by being able to manage the supply chain process. This was particularly the case in business to consumer electronic commerce, where companies had the ability to run virtual inventories. For example, one of the companies had available on its site 50,000 items for sale, 9,000 in the store, and 41,000 in manufacturers' warehouses.

From Table 5.12 we can observe that the mean value for anticipated reduced inventories as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. In accordance with that, we can conclude that the surveyed companies overestimated the magnitude of this benefit.

6.4.2 Intangible benefits

Improved image

The interviews revealed that electronic commerce had presented a whole new way of improving a company's image by showing that it was "capable of being out there"(e). Many found that electronic commerce definitely modified the way people perceived the company. Customers saw the company as more cutting-edge if it participated in electronic commerce. This had an extremely positive effect on the value of businesses engaged in electronic commerce, with some companies recording higher values on the share market as a result.

As seen in Table 5.12, the mean value for anticipated improved image as a benefit of electronic commerce was higher than the mean value for the same benefit encountered. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was not statistically significant. Thus we can conclude that the surveyed companies correctly estimated the magnitude of this benefit.

Competitive advantage

It was revealed in the nterviews that competitive advantage represented a significant benefit which companies can acquire through electronic commerce. This was particularly the case if the company "was getting out there early and acquiring market share ahead of the others" (e). In many cases electronic commerce had raised the required level of entry into the market place, and hence made entry harder. That factor alone, had in a sense, generated competitive advantage for those who were already involved. Some companies had definitely gained a competitive advantage through being able to offer their customers the best prices on 90% of what they buy, and to deliver on time, as a result of electronic commerce,. Some, however, did not have a problem with gaining competitive advantage, but rather with maintaining it. Straub (2000) emphasises that companies involved in electronic commerce have a distinctive competitive advantage over those that are not.

According to Table 5.12 the mean value for anticipated competitive advantage as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this benefit.

Customer loyalty

The interviews revealed that companies were able to develop customer loyalty, primarily as a result of introducing electronic commerce, by being responsive to customers' ideas. Customers were realising how easy it was to purchase from the company "and after a few days another purchase was made from them" (a). As a result of customer management, some companies had developed customer loyalty. The principle was that if the customers liked the product then there was every chance they would repurchase it. Customer loyalty was, for some, a matter of maintaining it in the sense that if a company did not offer online shopping, it was actually disadvantaging itself. According to Coulston (1999) and Hoffman et al (1999), customer loyalty is among the benefits companies can count on once they become involved in electronic commerce.

From Table 5.12 we can observe that the mean value for anticipated customer loyalty as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Thus it can be concluded that the surveyed companies overestimated the magnitude of this benefit.

Enhanced skills of employees

It was revealed in the interviews, presented in chapter four, that the benefits of enhanced skills of employees were achieved in some companies because of the introduction of electronic commerce. "People who looked after company's legacy system or marketing, for example, were given a chance to acquire skills which they didn't have before"(g). Enhanced employee skills, however, encouraged people to move around in the work environment.

Table 5.12 shows that the mean value for anticipated enhanced skills of employees as a benefit of electronic commerce was higher than the mean value for the same benefit encountered. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was not statistically significant. Hence, the conclusion can be drawn that the surveyed companies correctly estimated the magnitude of this benefit.

Secure electronic commerce environment

A secure electronic commerce environment, according to the interviews, was beneficial if the company was to be "seen as a secure electronic commerce environment"(f). This related to the company's integrity and reliability and was therefore one of the highest priorities for many companies.

From Table 5.12 it can be seen that the mean value for anticipated secure electronic commerce environment as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. On that basis it can be concluded that the surveyed companies overestimated the magnitude of this benefit.

Better knowledge management

The interviews revealed that electronic commerce had enabled "the share of knowledge and therefore better knowledge management, both internal and external"(f). These views are also evident in the literature (Fusaro, 1998). The management teams in some companies had realised the importance of knowledge itself and knowledge management processes, at every stage. According to Table 5.12, the mean value for anticipated better knowledge management as a benefit of electronic commerce was higher than the mean value for the same benefit achieved. The Sign test represented in Table 5.13 indicated that the difference between the anticipated and achieved mean values of that benefit was statistically significant. Therefore, it is possible to conclude that the surveyed companies overestimated the magnitude of this benefit.

6.5 *Conclusion*

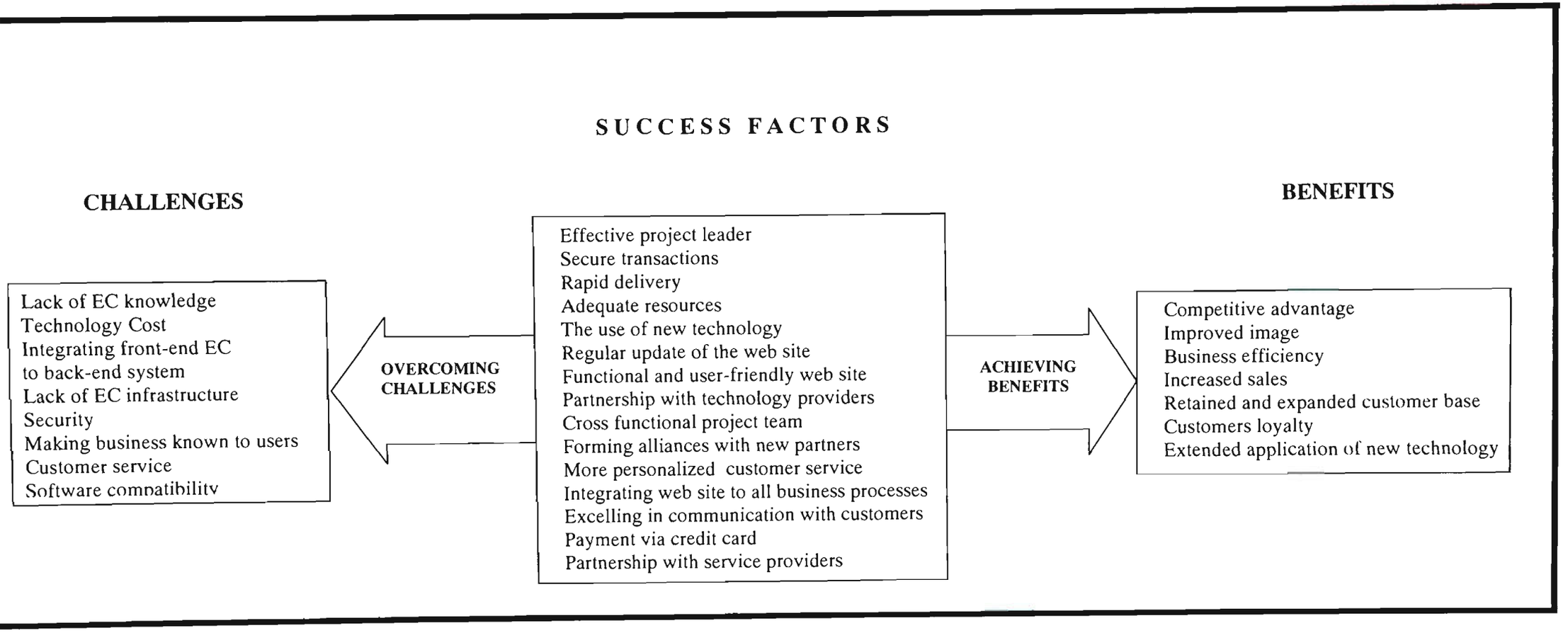
On the basis of the literature review, the semi-structured interviews and the survey analysis it was possible to assemble a set of key success factors as means of overcoming the challenges and achieving the benefits of electronic commerce. The set was developed in a way that reflects the major findings from the semi-structured interviews with the seven organisations and the survey of the top 500 Australian companies.

The challenges, success factors and benefits of electronic commerce that the participants in the semi-structured interviews suggested were influencing each other (Chapter Four) were included in the set if a correlation between them existed, according to Tables 5.31 and 5.32.

The challenges, success factors and benefits positioned in the top 50% of their respected rank order tables (5.8; 5.11; and 5.14), which were correlated with each other according to Tables 5.31 and 5.32, were also included in the set.

Figure 6.1 representing the major findings is presented on the next page.

Figure 6.1 The Set of Key Success Factors, Challenges and Benefits of Electronic Commerce



The minor challenges, success factors and benefits of electronic commerce are those that are positioned in the top 50% of their respected rank order tables (5.8; 5.11; and 5.14), but correlation between them according to Tables 5.31 and 5.32 did not exist. This list also includes the challenges, success factors and benefits that are not among the top 50% of their respected rank order tables (Tables 5.8; 5.11 and 5.14), but correlation between them according to Tables 5.31 and 5.32 did exist. These are:

- Challenges - Acquiring IT skilled people, Budget, Dealing with intermediaries and Web site issues.
- Success factors – Top management support, Responsive and flexible to the market, Responsive and flexible to new strategies, Being visionary, Partnership with suppliers, Online catalogue, Advertising in newspapers, magazines, Radio and TV, Online tracking facilities, Allowing FAQ on web site, Providing online decision support system, Online personalised recommendations, Active role of IT department, Advertising online and Disintermediation.
- Benefits - Enhanced skills of employees, Acquisition of a niche market, Better knowledge management, Increased automation of processes, Reduced operating cost and Reduced inventories.

Apart from the above mentioned major and minor findings, some of the potential challenges, success factors and benefits which were investigated do not seem to play an important role in electronic commerce in Australian companies. These "fillers" include challenges, success factors and benefits that do not fit the criteria for major and minor findings. These include:

- Challenges – Measuring success, Managing change, Reliable technology vendor, Obtaining senior managers support, Employee resistance towards electronic commerce, Reaching customers in rural and regional areas, Internet service provider reliability and Current electronic commerce legislation.
- Success factors – Appropriate organisational structure, Appropriate metrics to measure success, Electronic payment system, Appropriate packaging, Availability of new intermediaries, Web site listed on critical search engine,

Appropriate sociotechnical policy and Comprehensive electronic commerce legislation.

- Benefits – Secure electronic commerce environment.

This research identifies and evaluates factors that business organisations can depend on to add value to their businesses. Therefore, for managers and project leaders in organisations involved in electronic commerce the implication of the above findings is that they can be used as a checklist to assist firms in their effective adoption of e-commerce and the maximisation of opportunities. They can also enable business enterprises in Australia to inhibit the problems and achieve the benefits of electronic commerce.

CHAPTER 7 CONCLUSION

7.1 *Introduction*

This thesis sought to identify and evaluate the benefits, challenges and success factors of electronic commerce in Australia. In order to enable businesses to maximise the potential of electronic commerce it is necessary to make them aware of the challenges, success factors and benefits of trading electronically. This study concentrated on well-established organisations because of anecdotal evidence which suggested that large businesses are rapidly expanding their electronic commerce involvement and that electronic commerce is more prevalent in well-established organisations in Australia.

This chapter summarises the thesis questions, and offers an overview of the research, the key findings, the practical implications of the research, the limitations of this research and suggestions for further research.

7.2 Thesis Questions

The purpose of this thesis was to answer the following questions:

- What are the challenges of electronic commerce that inhibit its successful operation?
- What was the anticipated and actually encountered impact of these challenges?
- What are the key success factors that will guide and support the development of electronic commerce as a medium of business, and achieve benefits?
- What was the anticipated and actually identified impact of these success factors?
- What are the benefits of electronic commerce?
- What were the anticipated and actually achieved benefits of electronic commerce?

7.3 Overview of the Research

To answer the above questions the research reported in this thesis was conducted in four phases. In the first phase an intensive review of the relevant literature was carried out. From that literature review a number of issues, such as the enablers and

inhibitors of electronic commerce, as well as the benefits of electronic commerce, were identified.

In the second phase, in order to explore the electronic commerce issues identified from the literature in Australian companies, interviews with senior managers in seven well-established companies located in Melbourne and Sydney, who use electronic commerce in their businesses, were conducted. This exploratory part of the research provided the researcher with information on the enablers, inhibitors and benefits of electronic commerce in the participating companies. The analysis of the interviews revealed that different companies experienced slightly different enablers, inhibitors and benefits of electronic commerce. This analysis also revealed the existence of additional enablers, inhibitors and benefits among participants that had not been identified in the literature.

In the third phase of the research a nation-wide survey was undertaken to establish whether the findings from the literature and the interviews could be confirmed and further issues identified.

The fourth phase involved analysis of the survey responses. The response rate was almost 22%. To establish if there was a significant difference between the anticipated and identified enablers, inhibitors and benefits of electronic commerce in participating organisations, the Sign test was performed. In order to determine the existence of differences among the enablers, inhibitors and benefits of electronic commerce between the four industries with the highest response rates and the entire sample, the Kruskal-Wallis test were performed. To establish rank orders of enablers, inhibitors and benefits of electronic commerce, mean and standard deviation were computed. Finally, to see if there was any correlation between the enablers, inhibitors and benefits of electronic commerce, correlation analysis was performed.

7.4 Summary of Findings

This research established that a significant portion of Australian companies have embraced electronic commerce as a way of doing business. In addition it was found that the vast majority of participating companies did not have their businesses fully

electronic - that is capable of conducting all business electronically - but they expressed considerable confidence of achieving this in the foreseeable future.

Companies were generally reluctant to discuss issues relating to electronic commerce in their businesses. Such reluctance was understandable as their concerns usually included publicly revealing the problems they had, the factors that made the business successful and the security measures they had implemented.

The nation-wide survey of large businesses revealed that the majority of companies encountered a number of common challenges, identified a number of common success factors, and achieved a number of common benefits from electronic commerce. The reason for this, as revealed in the interviews with senior managers in charge of electronic commerce, was often that all the parties involved were still at stage one of electronic commerce.

- ***Inhibitors/Challenges***

The major inhibitors or challenges of electronic commerce among Australian companies included:

- integrating front-end electronic commerce to back-end system;
- technology cost;
- lack of e-commerce knowledge;
- managing change; and
- acquiring IT skilled people.

This research revealed that Australian companies correctly estimated the majority of challenges of electronic commerce that lay ahead. However, the research also revealed that some challenges, such as technology cost, software compatibility, and reliable technology vendor, were not expected to be as considerable as they subsequently proved to be. On the other hand some challenges, such as obtaining senior managers support and dealing with intermediaries, were expected to be more difficult than ultimately proved to be.

- ***Success Factors***

The major success factors in the establishment of electronic commerce among Australian companies included:

- effective project leader;
- secure transactions;
- rapid delivery;
- top management support; and
- more personalised customer service.

This research revealed that Australian companies correctly predicted the majority of factors that influence their electronic commerce success. Nevertheless, the research also revealed that some factors, such as adequate resources, an effective project leader and forming alliances, were not expected to contribute as much to the success of electronic commerce as they later proved. On the other hand, some factors, such as having the web site listed on critical search engines, advertising online and disintermediation, were expected to contribute more to the success than they later proved.

- ***Benefits***

The major benefits of electronic commerce achieved among Australian companies included:

- improved image;
- competitive advantage;
- business efficiency;
- increased automation of processes; and
- customer loyalty.

This research revealed that Australian companies overestimated all of the benefits of electronic commerce. Therefore, the conclusion that can be drawn is that companies did not achieve such substantial benefits from electronic commerce as they were expecting.

The nation-wide survey revealed that electronic commerce was most widely embraced within the finance/banking, manufacturing, communication, and wholesale/retail industry sectors. The survey also revealed a great similarity between the rankings of encountered challenges, identified success factors and achieved benefits among the four industries with the highest response rate. Therefore, the conclusion that can be drawn is that the majority of companies face very similar electronic commerce dilemmas, regardless of the industry they operate in.

It was found that there was a significant correlation between a number of success factors and a number of both challenges and benefits of electronic commerce. On the basis of the research findings a key set of success factors which could overcome the challenges and create benefits for companies involved in electronic commerce, was developed.

7.5 *Research Findings and Previously Reported Research*

The findings from this research have revealed that Australian companies involved in electronic commerce are undertaking steps, in accordance with the adoption theory, to acquire the necessary knowledge to be able to "fulfil a specific task" (Enos and Park, 1988, p. 26), in this case, to participate in this lucrative area of business. These steps include encouraging employees to educate themselves, forming cross-functional project teams in order to overcome knowledge gaps, forming alliances with partners that have particular knowledge about electronic commerce, and forging partnerships with technology and service providers.

It was also revealed from this research that Australian companies are making certain efforts, in accordance with diffusion theory, to spread electronic commerce throughout the whole business and the industry. Such efforts are exemplified by influencing other departments, or parts of the company, to accept electronic commerce as a reality of modern business and encouraging business partners to take up electronic commerce as a way of conducting their business by pointing out the benefits of electronic commerce and explaining the advantages of being involved in electronic commerce.

It is also important to notice that some of findings from this research were reported in previous studies. Iacovou, et al. (1996) found from their earlier work on EDI that the potential benefits of EDI as an earlier model of EC included business efficiency, operational savings and tactical and competitive advantage. These benefits are also found to be among the major electronic commerce benefits identified in this research. Other benefits identified in this research, also found in prior research include customer loyalty and reduction of costs (Wolfinbarger and Gilly, 2001); competitive advantage (Giunipero et al, 2000) and expanded existing markets (Lowry et al, 1999).

The major challenges that lay ahead of Australian companies engaged in electronic commerce, identified in this research, have also been identified in previous research. These include integrating front-end electronic commerce and back-end systems (Lowry et al, 1999; KPMG, 1999); making business known to users and security challenges (Lowry et al, 1999); lack of top management support (Guarino and Wilemon, 1992) and employee resistance towards new technologies (Winfield, 1991).

Some of the success factors that enable companies to overcome the challenges and achieve the benefits of electronic commerce identified in this research have also been identified in previous research. These include forming strategic alliances and online advertising (Lowry et al, 1999); acquiring skilled people (KPMG, 1999); user-friendly web site and more personalised customer service (Wolfinbarger and Gilly, 2001).

7.6 *Practical Implications of the Research*

The relevant literature review, the interviews conducted with senior managers in charge of electronic commerce in seven large organisations located in Melbourne and Sydney, and the nation-wide survey all indicate that adoption of electronic commerce as a way of doing business is growing in Australia.

This research has identified and evaluated the factors that business organisations can depend on to maximise the potential of electronic commerce in Australia. For

managers and project leaders, the implication is that there is a set of success factors can be used as a help in effective adoption of electronic commerce and maximisation of its opportunities.

The findings of this study have practical implications for current and future participants in electronic commerce. They provide companies who wish to engage in electronic commerce in the future with guidelines that will better prepare them for the changes, thereby increasing their chances of success, and helping them to generate a positive approach towards such activity and avoid the pitfalls that can result in severe economic consequences.

7.7 *Limitations of the Research*

The limitations of this research are:

- The interviews were conducted with only seven large organisations. It would have been preferable to interview a slightly higher number of companies in order to get a more accurate picture about their involvement in electronic commerce. However, despite a huge endeavour to persuade around 100 companies to participate, only seven accepted the invitation. Nevertheless, this limitation was overcome by the fact that all seven participating companies were well-established, well-respected and well-known.
- The interviews were conducted with six companies located in Melbourne and one in Sydney. It would have been useful to have had a wider geographical spread to better understand their experiences with electronic commerce. However, the decision to focus on those two locations was a conscious one, for two reasons. The first reason was convenience of locations, with regard to both time and resource constraints, especially since Melbourne is the researcher's residence. Secondly, the vast majority of the top 500 Australian companies are located in those two cities. This limitation was, however, overcome through the subsequent survey that was carried out nation-wide.
- Finally, this research focused only on the challenges, success factors and benefits of electronic commerce among Australian companies. It would have been useful to investigate a range of other aspects of electronic commerce

in Australia to complement this research, but due to time and resource constraints this was not feasible.

7.8 *Suggestions for Further Research*

The findings highlighted areas of research that were beyond the scope of this study. Some of these areas are as follows:

- Although this research addresses well-established business enterprises in Australia, similar research into small and medium-sized businesses could generate different findings of interest.
- Further research in other countries, with similar objectives, and parameters to this research on electronic commerce, is suggested.
- Based on experience from this research that the great majority of businesses were very reluctant to talk about many matters with regard to electronic commerce, once the climate changes, further research into the creation of value by electronic commerce, its profitability and other issues is suggested.

7.9 *Concluding Comments*

As electronic commerce expands, many organisations around the world and Australia will endeavour to engage in this new way of doing business. Most of them will achieve this in the foreseeable future. However, those that stand the best chance of being successful are the ones that have a thorough knowledge of the opportunities, pitfalls and benefits electronic commerce offers.

The contribution of this research to the existing body of knowledge and practice is significant. Because the nature of electronic commerce is global, the findings from this research should attract the attention of current and future researchers. These findings should also be applicable to businesses over a much wider industry range, as well as to businesses of different size. The application of the key set of challenges, success factors and benefits of electronic commerce has the ability to facilitate many businesses in their successful transition from traditional to electronic commerce.

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Appendix I Interview Script

Interview Script

Name of interviewee _____

Name of organization _____

Date/Time of Interview _____ **Length of interview** _____

SECTION A - About the Company

1. What is the type of business your company is in? _____

2. Which of the following clearly describes the industry in which your company operates?

Agriculture, forestry, fishing	1	Property and business services	11
Community Services	2	Publishing	12
Construction	3	Recreation and other services	13
Communications	4	Research and Development	14
Education/Training	5	Science	15
Finance/Banking	6	Transport and Storage	16
Insurance	7	Wholesale and retail trade	17
International Trade	8	Other (please specify)	
Manufacturing	9	_____	18
Medicine/Pharmacy	10		

3. Does your company have both e-business and traditional business?

5. When did your company establish e-commerce? _____

6. Which aspects of your business are electronic?

   i) Marketing
   ii) Buying
   iii) Selling
   iv) Other, please specify_____

7. What is the medium of e-commerce you use?

i) Internet
ii) Intranet
iii) Extranet
iv) EDI
v) Other, please specify _____

8. What is the model of your e-commerce?
   i) Business to Business
   ii) Business to consumer
   iii) Within business
   iv) Other, please specify _____

8. Which goods and/or services do you offer online?

9. Is your business fully electronic? (ie capable of handling e-payments, e-delivery, e-trading of goods and services)

10. Are these electronic business functions fully utilised?

11. If not, how do you plan to encourage users to use these facilities?

SECTION B - Benefits of E-commerce

Could you please tell me which of the following benefits has your company achieved, and how would you justify that?

1. Business efficiency

   _____

   _____

2. Expanded customer base

   _____

   _____

3. Reduced operation costs

4. Developed customer loyalty

5. Reduced inventories

6. Gained competitive advantage

7. Acquired niche market

8. What other benefits have you achieved as a result of introducing e-commerce?

SECTION C - Challenges/Problems of E-commerce

Could you please tell me which of the following challenges/problems has your company encountered and how have you dealt with them?

1. Employees resistance

2. Problem with intermediaries

3. Security system

4. Web site design

5. Software installation

6. Service provider

7. Technology cost

8. Lack of Internet infrastructure

9. Cost of integrating the Internet

   into the rest of business practices

13. Poor budgeting

14. E-business legislation

15. GST incorporation

16. Have you had any other problem with regards to establishing your e-commerce?

SECTION D - Success Factors of E-Commerce

Could you please tell me which of the following success factors of e-commerce have you identified and how do you justify them?

1. Senior management support

2. Cross-functional team

3. Own computing/IT department

4. Effective project leader

5. Appropriate sociotechnical policy

6. Adequate resources

7. Appropriate organisation structure

8. Adequate security system

9. Integrated Internet into the rest of business practices

10. Reliable and cheap supplier

11. Web site design

12. Updated content of the Web site

13. Web site on critical search engines

14. Online catalogue

15. Online tracking facilities

16. Online decision support system

17. Online personalised recommendations

18. FAQ on Web site

19. Advertising in newspapers

20. Advertising online

21. Delivery time

22. Appropriate packaging

_____

_____

23. Partnership with technology provider_____

_____

24. Partnership with suppliers

_____

_____

25. Payment via credit card

_____

_____

26. Payment via digital cash

_____

_____

27. What are the other success factors of your e-commerce?

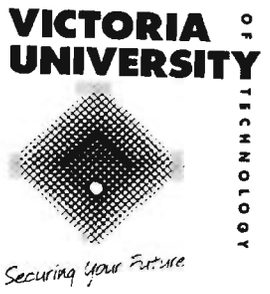
SECTION E - Future of E-commerce

1. What are your company projections about e-commerce?

2. Who makes these projections?

3. On which merits are these projections made?

Appendix II Survey Questionnaire



ENABLERS AND INHIBITORS OF ELECTRONIC COMMERCE

A SURVEY OF ISSUES THAT WILL LEAD TO BUSINESS SUCCESS

JOZE KUZIC
VICTORIA UNIVERSITY
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MELBOURNE CITY MC VIC 8001

THE ANSWERS TO THE SURVEY WILL BE KEPT AT STRICT CONFIDENTIALITY
THE NAMES OF INDIVIDUALS AND ORGANISATIONS WILL AT NO TIME BE REVEALED

JULY 2000

SURVEY QUESTIONNAIRE

This survey is part of DBA (Doctor of Business Administration) thesis titled ***"Enablers and Inhibitors of Electronic Commerce: An Australian Study".*** It will identify challenges, success factors and benefits of electronic commerce among Australian companies.

Your impact and support are highly appreciated. Please answer as many questions as you can and send it back to me in the ***stamped envelope enclosed***.

SECTION A - ABOUT YOUR COMPANY

1. Which of the following best describes the industry in which your company operates?

Agriculture, forestry, fishing	1	Property and business services	11
Community Services	2	Publishing	12
Construction	3	Recreation and other services	13
Communications	4	Research and Development	14
Education/Training	5	Science	15
Finance/Banking	6	Transport and Storage	16
Insurance	7	Wholesale and retail trade	17
International Trade	8	Other (please specify)	
Manufacturing	9	_____	18
Medicine/Pharmacy	10		

2. Do you use any aspect of e-commerce in your business?

Yes No

If you don't use e-commerce in your business, please send the questionnaire back to me. A stamped envelope is enclosed.

If you do use e-commerce in your business, please answer the following question:

SECTION B - GENERAL INFORMATION

1. What is your title as determined by your company?

---

2. What is your highest level of education? Please tick one.

Secondary

Tertiary
- Bachelor
- Master
- Ph.D
- Other

SECTION C - CHALLENGES/PROBLEMS

Please indicate below the challenges or problems of electronic commerce experienced by your company (*please circle one response for each item).* If you have anticipated or experienced any other challenges/problems, please add them to the table.

Challenges/problems	Anticipated impact						Actual impact					
	Not anti cipated	Lowest impact				Highest impact	No impact	Lowest impact				Highest impact
Budget	0	1	2	3	4	5	0	1	2	3	4	5
Employee resistance towards e-commerce	0	1	2	3	4	5	0	1	2	3	4	5
Measuring success	0	1	2	3	4	5	0	1	2	3	4	5
Managing change	0	1	2	3	4	5	0	1	2	3	4	5
Security	0	1	2	3	4	5	0	1	2	3	4	5
Technology cost	0	1	2	3	4	5	0	1	2	3	4	5
Web site issues	0	1	2	3	4	5	0	1	2	3	4	5
Software setup	0	1	2	3	4	5	0	1	2	3	4	5
Lack of e-commerce infrastructure	0	1	2	3	4	5	0	1	2	3	4	5
Integrating front-end e-comm erce to back-end system	0	1	2	3	4	5	0	1	2	3	4	5
Lack of e-business knowledge	0	1	2	3	4	5	0	1	2	3	4	5
Acquiring IT skilled people	0	1	2	3	4	5	0	1	2	3	4	5
Reliable technology provider	0	1	2	3	4	5	0	1	2	3	4	5
Internet service provider reliability	0	1	2	3	4	5	0	1	2	3	4	5
Reliable and timely supply	0	1	2	3	4	5	0	1	2	3	4	5
Current e-commerce legislation	0	1	2	3	4	5	0	1	2	3	4	5
GST	0	1	2	3	4	5	0	1	2	3	4	5
Dealing with intermediaries	0	1	2	3	4	5	0	1	2	3	4	5
Quality customer service	0	1	2	3	4	5	0	1	2	3	4	5
Making business known to users	0	1	2	3	4	5	0	1	2	3	4	5
Reaching the customers in rural and regional areas	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5

SECTION D - SUCCESS FACTORS

Please indicate below the importance of each of success factors listed below as they apply to electronic commerce *(please circle one response for each item).*

If you have identified or anticipated any other success factors, please add them to the table.

	Anticipated Success factors						**Identified** Success factors					
Success factors	Not anti cipated	Least important				Most important	Not iden tified	Least important				Most important
Adequate resources (finance &people)	0	1	2	3	4	5	0	1	2	3	4	5
Top management support	0	1	2	3	4	5	0	1	2	3	4	5
Appropriate Sociotechnical policy	0	1	2	3	4	5	0	1	2	3	4	5
Appropriate Organisation structure	0	1	2	3	4	5	0	1	2	3	4	5
Appropriate metrics to measure success	0	1	2	3	4	5	0	1	2	3	4	5
Active role of IT department in the organisation	0	1	2	3	4	5	0	1	2	3	4	5
Cross-functional project team	0	1	2	3	4	5	0	1	2	3	4	5
Effective project leader	0	1	2	3	4	5	0	1	2	3	4	5
Being visionary	0	1	2	3	4	5	0	1	2	3	4	5
Responsive and flexible towards new strategies	0	1	2	3	4	5	0	1	2	3	4	5
Responsive and flexible to the market	0	1	2	3	4	5	0	1	2	3	4	5
Comprehensive e-commerce legislation	0	1	2	3	4	5	0	1	2	3	4	5
Application of GST to e-commerce	0	1	2	3	4	5	0	1	2	3	4	5
Forming alliances with new partners	0	1	2	3	4	5	0	1	2	3	4	5
Partnership with technology providers	0	1	2	3	4	5	0	1	2	3	4	5
Partnership with service providers	0	1	2	3	4	5	0	1	2	3	4	5
Partnership with suppliers	0	1	2	3	4	5	0	1	2	3	4	5
The use of new technology	0	1	2	3	4	5	0	1	2	3	4	5
Secure transactions	0	1	2	3	4	5	0	1	2	3	4	5
Integrating web site into the rest of business functions	0	1	2	3	4	5	0	1	2	3	4	5
Functional and userfriendly web site	0	1	2	3	4	5	0	1	2	3	4	5
Regular update of the content of the Web site	0	1	2	3	4	5	0	1	2	3	4	5

Web site listed on critical search engines	0	1	2	3	4	5	0	1	2	3	4	5
Online catalogue	0	1	2	3	4	5	0	1	2	3	4	5
Online tracking facilities	0	1	2	3	4	5	0	1	2	3	4	5
Providing online decision support system	0	1	2	3	4	5	0	1	2	3	4	5
Online personalised recommendations	0	1	2	3	4	5	0	1	2	3	4	5
Allowing FAQ on Web site	0	1	2	3	4	5	0	1	2	3	4	5
Electronic payment system	0	1	2	3	4	5	0	1	2	3	4	5
Payment via credit card	0	1	2	3	4	5	0	1	2	3	4	5
Advertising online	0	1	2	3	4	5	0	1	2	3	4	5
Advertising in newspapers, Magazines, Radio, TV, etc.	0	1	2	3	4	5	0	1	2	3	4	5
Rapid delivery	0	1	2	3	4	5	0	1	2	3	4	5
Appropriate packaging	0	1	2	3	4	5	0	1	2	3	4	5
More personalised customer service	0	1	2	3	4	5	0	1	2	3	4	5
Excelling in communication with customers	0	1	2	3	4	5	0	1	2	3	4	5
Disintermediariation	0	1	2	3	4	5	0	1	2	3	4	5
Availability of new intermediaries for e-commerce	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5

SECTION E - BENEFITS

Please indicate below the benefits of electronic commerce anticipated and achieved by your company *(please circle one response for each item)*. If you have achieved or anticipated any other benefits, please add them to the table below.

	Anticipated benefits						**Achieved benefits**					
Benefits	Not anti cipated	Minimum benefits				Maximum benefits	Not achieved	Minimum benefits				Maximum benefits
Business efficiency	0	1	2	3	4	5	0	1	2	3	4	5
Retained and expanded customer base	0	1	2	3	4	5	0	1	2	3	4	5
Acquisition of a niche market	0	1	2	3	4	5	0	1	2	3	4	5
Increased sales	0	1	2	3	4	5	0	1	2	3	4	5
Customer loyalty	0	1	2	3	4	5	0	1	2	3	4	5
Reduced operation costs	0	1	2	3	4	5	0	1	2	3	4	5
Reduced inventories	0	1	2	3	4	5	0	1	2	3	4	5
Secure electronic commerce environment	0	1	2	3	4	5	0	1	2	3	4	5
Extended application of new technology	0	1	2	3	4	5	0	1	2	3	4	5
Enhanced skills of employees	0	1	2	3	4	5	0	1	2	3	4	5
Increased automation of processes	0	1	2	3	4	5	0	1	2	3	4	5
Competitive advantage	0	1	2	3	4	5	0	1	2	3	4	5
Improved image	0	1	2	3	4	5	0	1	2	3	4	5
Better knowledge management	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5
	0	1	2	3	4	5	0	1	2	3	4	5

Thank you for your assistance

APPENDIX III Survey Data (Sections C to E)

N = number of values
Mis. val. = number of missing values

	N	Mis. val.	Min value	Max value
BUDGET *(ANTICIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

BUDGET *(ENCOUNTERED)*	94	7	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

EMPLOYEES RESISTANCE TOWARDS E C *(ANTICIPATED)*	98	3	.00	4.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

EMPLOYEES RESISTANCE TOWARDS E C *(ENCOUNTERED*	94	7	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

MEASURING SUCCESS *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

MEASURING SUCCESS *(ENCOUNTERED*)	91	10	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

MANAGING CHANGE *(ANTICIPATED)*	95	6	.00	4.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

MANAGING CHANGE *(ENCOUNTERED)*	93	8	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

SECURITY *(ANTICIPATED)*1	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

SECURITY *(ENCOUNTERED)*	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

TECHNOLOGY COST *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

TECHNOLOGY COST *(ENCOUNTERED)*	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

WEB SITE ISSUES *(ANTICIPATED)*	92	9	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

WEB SITE ISSUES *(ENCOUNTERED)*	91	10	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

SOFTWARE COMPATIBILITY *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

SOFTWARE COMPATIBILITY *(ENCOUNTERED)*	94	7	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

LACK OF EC INFRASTRUCTURE *(ANITCIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

LACK OF EC INFRASTRUCTURE *(ENCOUNTERED)*	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

INTEGRATING FRONT END EC TO BACK AEND SYSTEM *(ANTICIPATED)*	98	3	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

INTEGRATING FRONT END EC TO BACK AEND SYSTEM *(ENCOUNTERED)*	93	8	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

LACK OF EC KNOWLEDGE *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

LACK OF EC KNOWLEDGE*(ENCOUNTERED*)2	96	5	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

ACQIRING IT SKILLED PEOPLE *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

ACQIRING IT SKILLED PEOPLE *(ENCOUNTERED*)	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

RELIABLE TECHNOLOGY VENDOR (*ANTICIPATED*)	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

RELIABLE TECHNOLOGY VENDOR *(ENCOUNTERED*)	93	8	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

INTERNET SERVICE PROVIDER RELIABILITY *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

INTERNET SERVICE PROVIDER RELIABILITY *(ENCOUNTERED)*	96	5	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

OBTAINING SENIOR MANAGERS SUPPORT *(ANTICIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

OBTAINING SENIOR MANAGERS SUPPORT *(ENCOUNTERED)*	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

CURRENT EC LEGISLATION *(ANTICIPATED)*	91	10	.00	3.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

CURRENT EC LEGISLATION *(ENCOUNTERED)*	91	10	.00	3.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

GST *(ANTICIPATED)*	89	12	.00	3.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

GST *(ENCOUNTERED)*	87	14	.00	4.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

DEALING WITH INTERMEDIARIES *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

DEALING WITH INTERMEDIARIES *(ENCOUNTERED)*	94	7	.00	4.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

CUSTOMER SERVICE *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

CUSTOMER SERVICE *(ENCOUNTERED)*	95	6	.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

MAKING BUSINESS KNOWN TO USERS *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

MAKING BUSINESS KNOWN TO USERS *(ENCOUNTERED)*	95	6	1.00	5.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

REACHING CUSTOMERS IN RURAL AND REGIONAL AREAS *(ANTICIPATED)*	88	13	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LOWEST ANTICIPATED IMPACT
2	BELLOW AVERAGE ANTICIPATED IMPACT
3	AVERAGE ANTICIPATED IMPACT
4	ABOVE AVERAGE ANTICIPATED IMPACT
5	MOST ANTICIPATED IMPACT

REACHING CUSTOMERS IN RURAL AND REGIONAL AREAS *(ENCOUNTERED)* 87 14 .00 4.00

VALUE	LABEL
0	NO IMPACT
1	LOWEST IMPACT
2	BELLOW AVERAGE IMPACT
3	AVERAGE IMPACT
4	ABOVE AVERAGE IMPACT
5	MOST IMPACT

ADEQUATE RESOURCES (FINANCE AND PEOPLE) *(ANTICIPATED)* 95 6 .00 5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ADEQUATE RESOURCES (FINANCE AND PEOPLE) (IDENTIFIED) 94 7 2.00 5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

TOP MANAGEMENT SUPPORT *(ANTICIPATED)* 94 7 1.00 5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

TOP MANAGEMENT SUPPORT (IDENTIFIED) 93 8 1.00 5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

APPROPRIATE SOCIOTECHNICAL POLICY *(ANTICIPATED)* 79 22 .00 5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

APPROPRIATE SOCIOTECHNICAL POLICY (IDENTIFIED) 76 25 .00 5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

APPROPRIATE ORGANISATIONAL STRUCTURE *(ANTICIPATED)*	94	7	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

APPROPRIATE ORGANISATIONAL STRUCTURE (IDENTIFIED)	93	8	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

APPROPRIATE METRICS TO MEASURE SUCCESS *(ANTICIPATED)*	89	12	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

APPROPRIATE METRICS TO MEASURE SUCCESS (IDENTIFIED)	86	15	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ACTIV ROLE OF IT DEPARTMENT *(ANTICIPATED)*	90	11	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ACTIV ROLE OF IT DEPARTMENT (IDENTIFIED)	89	12	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

CROSS - FUNCTIONAL PROJECT TEAM *(ANTICIPATED)*	93	8	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

CROSS - FUNCTIONAL PROJECT TEAM (IDENTIFIED)	90	11	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

EFFECTIVE PROJECT LEADER *(ANTICIPATED)*	96	5	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

EFFECTIVE PROJECT LEADER (IDENTIFIED)	93	8	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

BEING VISSIONARY *(ANTICIPATED)*	88	13	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

BEING VISSIONARY(IDENTIFIED)	85	16	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

RESPONSIVE AND FLEXIBLE TOWARDS NEW STRATEGIES *(ANTICIPATED)*	90	11	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

RESPONSIVE AND FLEXIBLE TOWARDS NEW STRATEGIES (IDENTIFIED)	87	14	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

RESPONSIVE AND FLEXIBLE TO THE MARKET *(ANTICIPATED)*	90	11	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

RESPONSIVE AND FLEXIBLE TO THE MARKET (IDENTIFIED)	87	14	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

COMPREHENSIVE EC LEGISLATION *(ANTICIPATED)*	89	12	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

COMPREHENSIVE EC LEGISLATION (IDENTIFIED)	86	15	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

APPLICATION OF GST TO EC *(ANTICIPATED)*	90	11	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

APPLICATION OF GST TO EC (IDENTIFIED)	87	14	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

FORMING ALLIANCES WITH NEW PARTNERS *(ANTICIPATED)*	92	9	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

FORMING ALLIANCES WITH NEW PARTNERS (IDENTIFIED)	89	12	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

PARTNERSHIP WITH TECHNOLOGY PROVIDERS *(ANTICIPATED)*	94	7	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

PARTNERSHIP WITH TECHNOLOGY PROVIDERS (IDENTIFIED)	93	8	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

PARTNERSHIP WITH SERVICE PROVIDERS *(ANTICIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

PARTNERSHIP WITH SERVICE PROVIDERS (IDENTIFIED)	94	7	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

PARTNERSHIP WITH SUPPLIERS *(ANTICIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

PARTNERSHIP WITH SUPPLIERS (IDENTIFIED)	94	7	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

THE USE OF NEW TECHNOLOGY *(ANTICIPATED)*	95	6	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

THE USE OF NEW TECHNOLOGY (IDENTIFIED)	94	7	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

SECURE TRANSACTIONS *(ANTICIPATED)*	90	11	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

SECURE TRANSACTIONS (IDENTIFIED)	89	12	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ITGRATING WEB SITE TO ALL BUSINESS PROCESSES *(ANTICIPATED)*	91	10	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ITGRATING WEB SITE TO ALL BUSINESS PROCESSES (IDENTIFIED)	90	11	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

FUUNCTIONAL AND USERFRIENDLY WEB SITE *(ANTICIPATED)*	93	8	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

FUUNCTIONAL AND USERFRIENDLY WEB SITE (IDENTIFIED)	92	9	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

REGULAR UPDATE OF THE CONTENT OF THE WEB SITE *(ANTICIPATED)*	95	6	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

REGULAR UPDATE OF THE CONTENT OF THE WEB SITE (IDENTIFIED)	92	9	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

WEB SITE LISTED ON CRITICAL SEARCH ENGINE *(ANTICIPATED)*	82	19	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

WEB SITE LISTED ON CRITICAL SEARCH ENGINE (IDENTIFIED)	79	22	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ONLINE CATALOGUE *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ONLINE CATALOGUE (IDENTIFIED)	93	8	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ONLINE TRACKING FACILITIES *(ANTICIPATED)*	85	16	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ONLINE TRACKING FACILITIES (IDENTIFIED)	82	19	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

PROVIDING ONLINE DECISION SUPPORT *(ANTICIPATED)*	92	9	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

PROVIDING ONLINE DECISION SUPPORT (IDENTIFIED)	89	12	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ONLINE PERSONALISED RECOMMENDATIONS *(ANTICIPATED)*	90	11	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ONLINE PERSONALISED RECOMMENDATIONS (IDENTIFIED)	82	19	.00	4.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ALLOWING FAQ ON WEB SITE *(ANTICIPATED)*	92	9	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ALLOWING FAQ ON WEB SITE (IDENTIFIED)	84	17	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ELECTRONIC PAYMENT SYSTEM *(ANTICIPATED)*	89	12	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ELECTRONIC PAYMENT SYSTEM (IDENTIFIED)	86	15	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

PAYMENT VIA CREDIT CARD *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

PAYMENT VIA CREDIT CARD (IDENTIFIED)	93	8	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ADVERTISING ONLINE *(ANTICIPATED)*	87	14	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ADVERTISING ONLINE (IDENTIFIED)	86	15	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

ADVERTISING IN BEWSPAPERS, MAGAZINES, RADIO & TV *(ANTICIPATED)*	93	8	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

ADVERTISING IN BEWSPAPERS, MAGAZINES, RADIO & TV (IDENTIFIED)	90	11	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

RAPID DELIVERY *(ANTICIPATED)*	96	5	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

RAPID DELIVERY (IDENTIFIED)	93	8	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

APPROPRIATE PACKAGING *(ANTICIPATED)*	84	17	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

APPROPRIATE PACKAGING (IDENTIFIED)	81	20	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

MORE PERSONALISED CUSTOMER SERVICE *(ANTICIPATED)*	92	9	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

MORE PERSONALISED CUSTOMER SERVICE (IDENTIFIED)	85	16	1.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

EXCELLING IN COMMUNICATION WITH CUSTOMERS *(ANTICIPATED)*	84	17	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

EXCELLING IN COMMUNICATION WITH CUSTOMERS (IDENTIFIED)	77	24	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

DISINTERMEDIARIATION *(ANTICIPATED)*	81	20	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

DISINTERMEDIARIATION (IDENTIFIED)	76	25	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

AVAILABILITY OF NEW INTERMEDIARIES *(ANTICIPATED)*	86	15	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED
1	LEAST ANTICIPATED IMPORTANCE
2	BELLOW AVERAGE ANTICIPATED IMPORTANCE
3	AVERAGE ANTICIPATED IMPORTANCE
4	ABOVE AVERAGE ANTICIPATED IMPORTANCE
5	MOST ANTICIPATED IMPORTANCE

AVAILABILITY OF NEW INTERMEDIARIES (IDENTIFIED)	82	19	.00	5.00

VALUE	LABEL
0	NOT IDENTIFIED
1	LEAST IMPORTANT
2	BELLOW AVERAGE IMPORTANT
3	AVERAGE IMPORTANT
4	ABOVE AVERAGE IMPORTANT
5	MOST IMPORTANT

BUSINESS EFFICIENCY *(ANTICIPATED)*	95	6	1.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

BUSINESS EFFICIENCY (ACHIEVED)	87	14	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

RETAINED AND EXPANDED CUSTOMER BASE *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

RETAINED AND EXPANDED CUSTOMER BASE (ACHIEVED)	89	12	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

ACQUISITION OF A NICHE MARKET *(ANTICIPATED)*	93	8	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

ACQUISITION OF A NICHE MARKET (ACHIEVED)	83	18	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

INCREASED SALE *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

INCREASED SALE (ACHIEVED)	91	10	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

CUSTOMER LOYALTY *(ANTICIPATED)*	94	7	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

CUSTOMER LOYALTY (ACHIEVED)	84	17	1.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

REDUCED OPERATION COSTS *(ANTICIPATED)*	99	2	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

REDUCED OPERATION COSTS (ACHIEVED)	90	11	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

REDUCED INVENTORIES *(ANTICIPATED)*	94	7	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

REDUCED INVENTORIES (ACHIEVED)	85	16	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

SECURE EC ENVIRONMENT *(ANTICIPATED)*	89	12	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

SECURE EC ENVIRONMENT (ACHIEVED)	83	18	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

EXTENDED APPLICATION OF NEW TECHNOLOGY *(ANTICIPATED)*	97	4	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

EXTENDED APPLICATION OF NEW TECHNOLOGY (ACHIEVED)	89	12	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

ENHANCED SKILLS OF EMPLOYEES *(ANTICIPATED)*	91	10	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

ENHANCED SKILLS OF EMPLOYEES (ACHIEVED)	80	21	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

INCCREASED AUTOMATION OF PROCESSES *(ANTICIPATED)*	94	7	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

INCCREASED AUTOMATION OF PROCESSES (ACHIEVED)	85	16	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

COMPATITIVE ADVANTAGE *(ANTICIPATED)*	95	6	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

COMPATITIVE ADVANTAGE (ACHIEVED)	90	11	1.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

IMPROVED IMAGE *(ANTICIPATED)*	90	11	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

IMPROVED IMAGE (ACHIEVED)	82	19	1.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT

BETTER KNOWLEDGE MANAGEMENT *(ANTICIPATED)*	88	13	.00	5.00

VALUE	LABEL
0	NOT ANTICIPATED BENEFIT
1	MINIMUM BENEFIT ANTICIPATED
2	BELLOW AVERAGE ANTICIPATED BENEFIT
3	AVERAGE ANTICIPATED BENEFIT
4	ABOVE AVERAGE ANTICIPATED BENEFIT
5	MOST ANTICIPATED BENEFIT

BETTER KNOWLEDGE MANAGEMENT (ACHIEVED)	78	23	.00	5.00

VALUE	LABEL
0	NOT ACHIEVED BENEFIT
1	MINIMUM BENEFIT ACHIEVED
2	BELLOW AVERAGE ACHIEVED BENEFIT
3	AVERAGE ACHIEVED BENEFIT
4	ABOVE AVERAGE ACHIEVED BENEFIT
5	MOST ACHIEVED BENEFIT