

Key Factors for Implementation of e-commerce between Non-government Organisations and Government



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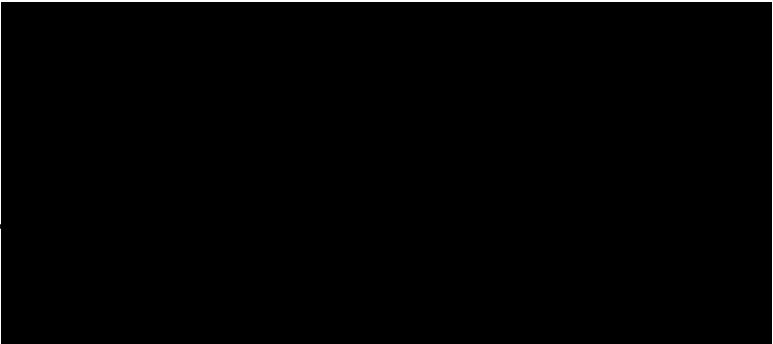
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Declaration

This thesis contains no material that 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 aims to identify the key factors for implementation of electronic commerce between non-government organisations and Government.

Multiple research strategies were employed to gather the appropriate data to address the research aims. Initially, a review of the literature was undertaken to identify the major issues, key drivers, key enablers and major barriers to the implementation of electronic commerce. This phase was used to inform the development of a script for the exploratory semi-structured interviews that were conducted with six non-government organisations in the health and community services sector. Findings from the interviews combined with findings from the literature review were used to develop a survey questionnaire.

A postal questionnaire was used to gather further data. In this phase, 484 government funded, non-government organisations that use electronic commerce to interact with government for business were surveyed. A total of 161 responses or a response rate of 33.26% was received. The data were analysed to answer the research aims by using content analysis for the data collected from the semi-structured interviews and a number of statistical tests appropriate for ordinal data from the survey questionnaire. In particular a number of single and summated Likert type scales were analysed using frequency tables.

The key findings identify 7 major drivers electronic drivers, two key implementation issues, 10 key enablers and 5 major barriers factors for implementation of electronic commerce between non-government organisations and Government.

CHAPTER ONE INTRODUCTION

1.1 Introduction

This thesis aims to identify the key factors for implementation of electronic commerce between non-government organisations and Government. This will involve determining: the key implementation issues that impact the uptake of electronic commerce. The key drivers for the adoption of electronic commerce, or why these organisations are implementing electronic commerce. The major barriers that inhibit the adoption of electronic commerce, or what has to be overcome so as not to stop the adoption of electronic commerce for these organisations. The key enablers for effective adoption of electronic commerce, or what assists or makes easier the implementation of electronic commerce in these organisations. This knowledge will be of importance to non-government organisations, governments and the IT profession.

For the purpose of this thesis the term electronic commerce has been defined from a combination of definitions established by a few authors (Berryman, Harrington, Layton-Rodin, & Rerolle, 1998; Harmon, Rosen, & Guttman, 2001; Kauffman & Walden, 2001; Torkzadeh & Dhillon, 2002; V. Zwass, 1996). The term electronic commerce often refers to the commercial application of computer systems using Internet protocols to electronically interact between the system user and the system. Often, it includes both technology and business processes such as the buying and selling of goods and services. For this research that is focused on non-government organisations, the commercial aspects of the use of technology are not as strong as other business. This research confirms non-government organisations do not appear to

rely heavily on the use of technology for their existence. In contrast with, for example, airline ticket bookings or on-line shopping. For this research the meaning of electronic commerce incorporates electronic file transfer using internet protocols, business-to-business transactions using internet protocols, email, intranets, extranets using internet protocols, and on-line systems using internet protocols. The context that these transactions take place will be non-government organisation to the consumer of services (often referred to as B2C), non-government organisation to business (often referred to as B2B) or non-government organisation to Government (referred to as B2G).

Although websites are not electronic commerce, often they are the intermediary point between the system user and the electronic commerce application that is used, and therefore often included in the definition (Liu & Arnett, 2000).

Non-government organisations for this research are those organisations delivering basic, yet essential, complimentary to government services usually these organisations are not-for-profit organisations. These organisations often provide community, health and related services. Usually if these services were not delivered by non-government organisations then governments would need to provide these essential services.

1.2 E-Commerce and Government

There are many governments throughout the developed-world that believe electronic commerce will assist and improve the service delivery of some government services. In addition electronic commerce will improve operational cost structures and will create for government a new service channel (Commonwealth of Australia, 2002a,

2002b, 2003a, 2003c; Government of Victoria, 2002; Government of United States of America, 2002; Government of Victoria, 1998; New Zealand Government, 2001; United Kingdom Government, 2001).

On the other hand, “Governments do not manufacture anything, but they produce and disseminate vast amounts of information across an extensive geographic area. Thus, e-commerce technologies are likely to have more influence on how governments operate, than on most businesses.” Furthermore, “e-commerce considerations of a government are not likely to be the same as those of a firm.” (Kauffman & Walden, 2001).

Similarly, commercial organisations are investing in electronic commerce for similar types of reasons as governments, although often there is also an underlying belief that electronic commerce will assist the organisation in producing some additional revenue (Benjamin & Wigard, 1995; Berryman et al., 1998; Butler & Power, 1999; Chattell, 1998; DeLone & McLean, 2003; Evans & Wurster, 2000; Hagel & Armstrong, 1997; Hart & Saunders, 1998; Kauffman & Walden, 2001; Kenjale, 2003; Min & Galle, 2003; Torkzadeh & Dhillon, 2002).

Non-government organisations play an important role in delivering a range of services for the government, for example in the Victorian health and community services sector, the Department of Human Services has an 8 billion dollar budget of which approximately 6 billion dollars is directed to non-government organisations (Department of Human Services, 2002a) .

As electronic commerce appears to be cheaper to implement than traditional IT technologies (Kauffman & Walden, 2001) more organisations appear to be implementing systems. Non-government organisations are also implementing electronic commerce. Inter-organisational data exchange will be a key driver for non-government to Government electronic commerce (Department of Human Services, 2002b).

There are a number of factors that will influence whether organisations implement electronic commerce. The important factors appear to be the drivers, enablers and barriers to the implementation of electronic commerce. The drivers of electronic commerce can be divided into 2 broad categories, those related to organisational factors or business environment factors, while the enabler and barrier factors may be grouped into 3 broad categories, those related to the organisation, or technology or the business environment the organisation operates within.

1.3 Drivers of Electronic Commerce

The drivers of electronic commerce, or in other words, why organisations are implementing electronic commerce, are important factors to understand, as they provide the reasons that are pushing the implementation of electronic commerce in these organisations? Are these factors internally generated or externally imposed on these organisations. These factors may determine the perceived value and the level of support electronic commerce is given by the organisation.

A report by Electronic Trading Concepts (ETC Electronic Trading Concepts, 2000a) examining electronic commerce in local government identified a number of drivers. These were grouped and summarized as: the increasing level of customer (or citizen)

expectations, a need for greater service responsiveness, a desire to increase operational efficiency, a perceived vehicle for local economic protection, a desire to be seen to establish a local business and operational leadership position for the organisation. Some of these factors appear to be internally generated while others appear to be the result of external pressure from the business environment. As this report was based on local governments which are both a government organisations and a service providers to federal and the state government. In their role as a service provider they are they similar to non-government organisations. Therefore the drivers identified in the report are also likely to be drivers for the use of electronic commerce by other non-government organisations.

1.4 Barriers of Electronic Commerce

The barrier factors or in other words, what has to be overcome so as not to impede or stop the adoption of electronic commerce in these organisations are important because if these are better understood then strategies may be developed to overcome these issues.

For simplicity these barrier factors may be grouped into 3 broad categories, those related to the organisation, or technology or the business environment the organisation operates within.

Many researchers have identified a range of electronic commerce barriers (Choudhury, Hartzel, & Konsynski, 1998; Evans & Wurster, 2000; Han & Noh, 2000; Hart & Saunders, 1998; Hope & Hope, 1997; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Karahanna, Straub, & Cherveny, 1999; Kyeong & Mee, 2000; Lowry, Singh, & Scholary, 1999; Min & Galle, 2003; Stewart & Segars, 2002; V. Zwass, 1996)

including: key organisational barrier factors such as: sufficient funds for both the initial implementation of electronic commerce and its on-going maintenance and support. An appropriate organisational capability to adequately manage the operational risks associated with the introduction of electronic commerce. Sufficient skilled staff to implement and provide on-going support of electronic commerce. Also often doubts or concerns about the viability of the Internet technology impacts on both investments and organisational support for electronic commerce initiatives.

Technology barriers often include factors such as: the lack of backend system integration with electronic commerce applications. The security and privacy of data when transacting over the Internet. Also the lack of appropriate technology in the organisation to support electronic commerce (Han & Noh, 2000).

While major business environment barriers include: poor local telecommunications infrastructure, high telecommunication tariffs, the high cost of internet service provider services and the ability to recruit new staff from the market place with the necessary electronic commerce implementation skills at a fair and reasonable cost.

1.5 Enablers of Electronic Commerce

The enabler factors are those that assist or make easier the implementation of electronic commerce in organisations.

For simplicity the enabler factors may be grouped into 3 broad categories, those related to the organisation, or technology or the business environment the organisation operates within. Many researchers (Agarwal & Prasad, 1999; Australia, 2002; Basu & Kumar, 2002; Benjamin & Wigard, 1995; Berryman et al., 1998; Butler & Power,

1999; Chattell, 1998; Choudhury et al., 1998; Chwelos, Benbasat, & Dexter, 2001; Commonwealth of Australia, 2002e; DeLone & McLean, 2003; Evans & Wurster, 2000; Hagel & Armstrong, 1997; Harmon et al., 2001; Hart & Saunders, 1998; Hope & Hope, 1997; Hu, Chau, Sheng, & Tam, 1999; Karahanna et al., 1999; Kauffman & Walden, 2001; Kenjale, 2003; Lowry et al., 1999; Lucas, 1999; Maxwell, 1999; Min & Galle, 2003; Riggins, 1999; Shaw, 2002; Tapscott, 1999; Thorp, 1998; Torkzadeh & Dhillon, 2002; M. Unitt & I. C. Jones, 1999) have identified a range of electronic commerce enabler factors including: key organisational enablers such as: senior management support to drive organisational change using electronic commerce as a catalyst. The necessary staff with the appropriate skills to implement and then support electronic commerce. Also sufficient funds allocated to electronic commerce are essential.

Often major technology enablers identified are: electronic commerce technology for secure (including authentication and non-repudiation) transactions and cost effective payment engines also appropriate internal technology to support electronic commerce such as web servers.

While major business environment enablers include: available and competitive Internet service providers (ISP) services and available telecommunications infrastructure.

Finally, basic interoperability standards for the exchange of data between organisations is emerging as a key requirement for electronic commerce (Basu & Kumar, 2002) which could be either an enabler or a barrier.

1.6 Rationale for Research

This research is important because although there is a substantial body of knowledge developing around electronic commerce, this appears to be more focused around commercial settings (Min & Galle, 2003). There is also a growing body of material around electronic government (or e-government) (Commonwealth of Australia, 2002b, 2003a, 2003b, 2003c; Forrester, 2001; Government of United States of America, 2002; Government of Victoria, 1998; New Zealand Government, 2001). This growing body of knowledge is however centred on government and citizen interactions. An equally important area is electronic commerce between non-government organisations and Government. Non-government organisations are often those organisations delivering basic, yet essential, community, health and other services. If these services were not delivered by these non-government organisations then governments would need to provide these essential services.

1.7 The Research Problem

This study aims to identify the key factors for implementation of electronic commerce between non-government organisations and Government.

A greater understanding of these factors will inform and assist key decision makers considering the introduction of electronic commerce interactions between non-government organisations and Government. This study will identify; the factors that determine the effective adoption of electronic commerce, the key implementation issues, key drivers for adoption of electronic commerce, major barriers that will inhibit deployment, and most importantly the key enablers of electronic commerce implementation for non-government organisations.

The use of electronic commerce between non-government organisations and the Government is important as it will enable and assist a number of key business interactions in a more consistent and timely manner (Commonwealth of Australia, 2002b, 2003a, 2003b, 2003c). Its implementation will drive down operational costs and make more consistent and valuable management information available to key decision makers.

The five specific aims of this research are to:

- Determine the factors that influence the adoption of electronic commerce.
(These factors are determined by the following aims.)
- Determine the key implementation issues that impact on the uptake of electronic commerce.
- Determine the key drivers for the adoption of electronic commerce, (or why these organisations are doing this).
- Determine the major barriers that inhibit the adoption of electronic commerce (or what has to be overcome or it will impede or stop the adoption of electronic commerce in these organisations).
- Determine key enablers for the implementation of electronic commerce (or what factors that assist or make easier the implementation of electronic commerce in these organisations).

The key enablers and major barriers identified by this study will be a major contribution to the body of knowledge about electronic commerce in non-government organisations.

1.8 Research Questions

The research questions are:

- What are the factors that influence the adoption of electronic commerce in non-government organisations? (These factors are determined by the following sub-questions.)
- What is the key implementation issue that impacts on the uptake of electronic commerce technology in these organisations?
- What are the key drivers for adoption of electronic commerce?
- What are the major barriers that inhibit the adoption of electronic commerce?
- What are key enablers for the adoption of electronic commerce?

1.9 Methodologies of Study

Multiple research strategies are used to investigate, explain and inform the research aims. The following four phases were undertaken to complete this study and address these goals:

- Phase one: literature review
- Phase two: exploratory research (semi-structured interviews)
- Phase three: descriptive research (postal questionnaire)
- Phase four: data analysis

The research framework is depicted in Figure 1.1 below.

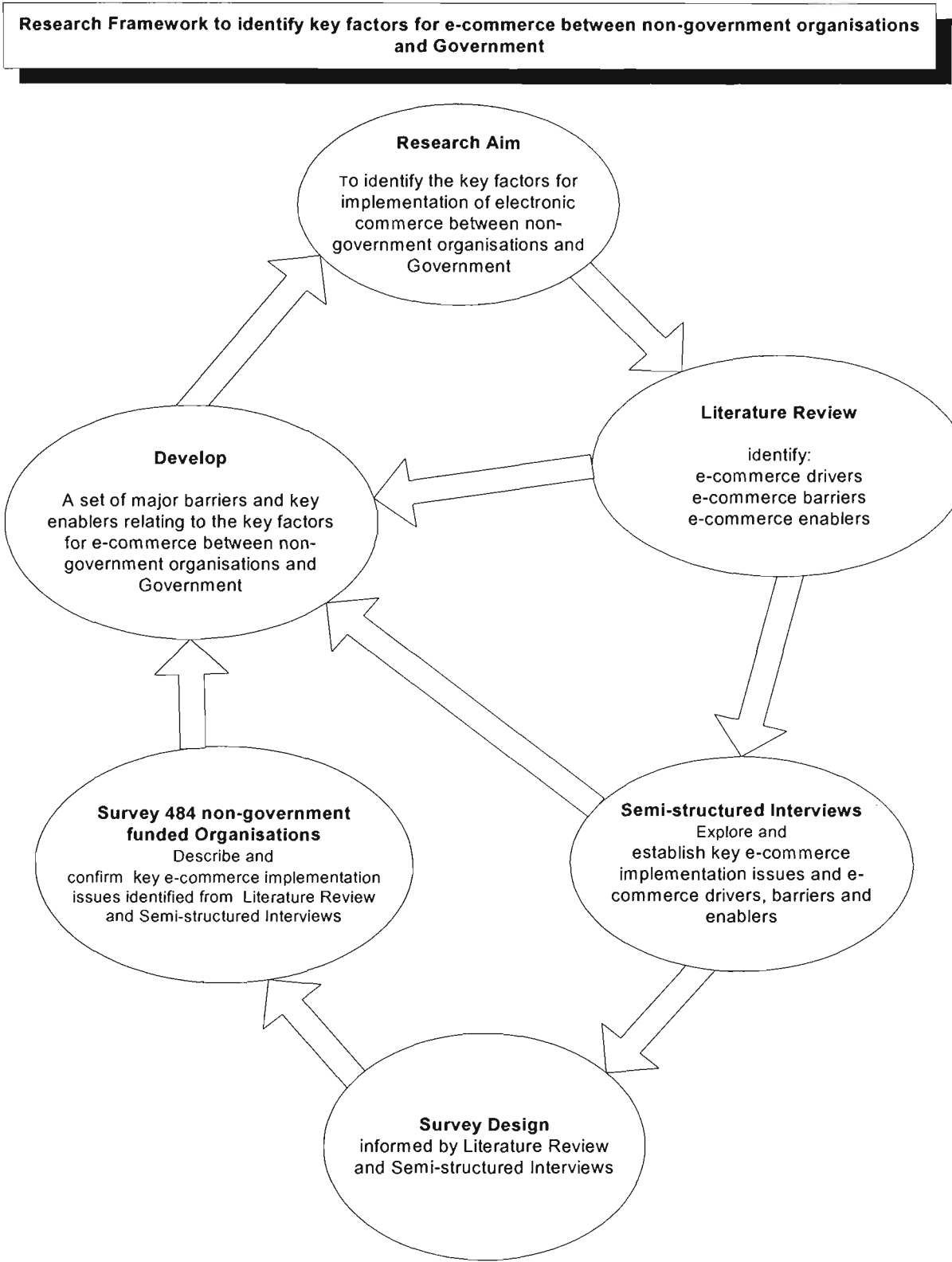


Figure 1.1 Research Framework – Key Factors for Implementation of e-commerce between non-government organisations and Government

Detailed descriptions of these phases are presented in Chapter 3 of this thesis.

1.10 Overview of the Chapters

The research questions and aims in this Chapter (1) were used to frame a review of the literature (Chapter 2) to determine the current body of knowledge available that was relevant and related to the research area. This was used to develop the research questions and inform the design of the semi-structured interviews (Chapter 4). Information from both literature review (Chapter 2) and the semi-structured interviews (Chapter 4) were used to design the survey instrument to collect data presented in Chapter 5. The findings in Chapter 6 are based on Chapter 2, 3 and 5. A summary of findings is presented in Chapter 7.

The thesis has been structured in the following manner; Chapter 2 presents a literature review. Chapter 3 provides details of the research methodologies and Chapter 4 presents data and analysis from the face-to-face semi-structured interviews. Chapter 5 presents data and analysis from the survey questionnaire, while Chapter 6 presents the research findings; finally Chapter 7 provides a conclusion to this research and includes a summary of the findings, practical implications and suggestions for future research.

1.11 Contribution of this Research

This research has identified and evaluated the key factors for implementation of electronic commerce between non-government organisations and Government. Most importantly this study has identified and reported on the key implementation enablers of electronic commerce at non-government organisations.

The findings from this study will allow non-government organisations to better plan and direct their limited resources to the most beneficial and most likely to succeed electronic commerce implementations. Also the findings from this study will allow government policy makers and planners to make more effective investment and service planning decisions to support Government policy direction.

Importantly this research will provide the key factors and key enablers for implementation of electronic commerce between non-government organisations and Government are available to both public and private or not-for-profit organisations. This is important for those organisations implementing electronic commerce. Also government organisations will benefit from this research as it provides insight into the key elements that will assist the implementation of electronic commerce by their trading partners (the non-government organisations). This research is a significant addition to the current body of knowledge in electronic commerce, particularly in relation to non-government organisations.

Importantly, these factors will provide key decision-makers with guidance on the key elements needed to ensure the successful implementation of electronic commerce, in a non-government organisation to government setting.

1.12 Significance of the Research

This research has practical implications for those in the community making decisions about the introduction of non-government to Government electronic commerce. To ensure that non-government and Government organisations make effective investments in the use of electronic commerce it is essential to identify, evaluate and

disseminate the factors that influence its adoption and implementation. Determining the key enablers is most significant. A better understanding of these factors will allow a better use of the limited funds of non-government organisations while ensuring a faster adoption rate of electronic commerce and related applications. The implementation of electronic commerce should lead to improved services and benefits to non-government organisations, the government and indirectly the community. Electronic commerce will enable new ways for the community to routinely interact with non-government organisations. while electronic commerce will provide non-government organisations an opportunity to stream-line and make more efficient many back-room clerical activities and therefore reduce some operational costs.

1.13 Conclusion

The importance of this research to identify the key factors for implementation of electronic commerce between non-government organisations and Government has been established. This chapter also presents clear research aims, an outline of the research methodology that will be followed to meet the research aims and also reasons why this research is important.

The next Chapter 2 presents a literature review that will help to further frame and guide this research.

CHAPTER TWO LITERATURE REVIEW

2.1 Introduction

This chapter presents the findings of the first phase of this research, a literature review. It is clear that there is a substantial body of knowledge developing around electronic commerce, although it appears to be either focused around broad theoretical or commercial settings. There is also a growing body of material around electronic government (or e-government). Electronic government according to West (,2000), refers to “the delivery of information and services through the Internet or other digital means.". This growing body of knowledge is centred on government and citizen interactions. An equally important area is the non-government to government electronic interactions. Non-government organisations are often those organisations delivering basic and yet essential community, health and other services. Often if these services were not delivered by these organisations then governments would need to provide these essential services.

A review of the literature confirmed there had been little research into the e-business interaction between non-government and Government organisations. In fact no specific literature was identified that presented key factors for the implementation of e-commerce between non-government organisations and Government.

This research aims to identify the key factors for implementation of electronic commerce between non-government organisations and Government.

This chapter is organised in the following manner: Section 2.2 provides an overview of electronic commerce, Section 2.3 discusses electronic commerce and government, Section 2.4 provides some definitions of electronic commerce technologies, while Sections 2.5 presents the drivers of electronic commerce. Section 2.6 highlights the barriers to the adoption of electronic commerce while Section 2.7 depicts the enablers of electronic commerce. Section 2.8 details Government Departments use of Electronic Commerce and Section 2.9 discusses Non-government organisations. Section 2.10 presents the variables identified from the literature and Section 2.11 details the research model. Finally Section 2.12 offers a conclusion to the chapter.

2.2 Electronic Commerce

There is a growing body of academic research focused on examining the determinants of adoption, diffusion and use of information technology (Bajaj & Nidumolu, 1998;; Choudhury et al., 1998; Davis, 1989; Dishaw, 1999; Doll;; Fenech, 1998; *Framework for Electronic Commerce on the Internet*, 1997; Ghorab, 1997; Green, 1998; Han & Noh, 2000; Harmon et al., 2001; Harrison,; Hart & Saunders, 1998; Hu et al., 1999; Igbaria & Tan, 1997; Igbaria et al., 1997; Kauffman & Walden, 2001;; Kyeong & Mee, 2000; Liu & Arnett, 2000; Mathieson, 1991; Moore & Benbasat, 1991;; Shaw, 2002) however these studies focus on commercially based information technology implementations and not non-government organisations that electronically interact with government.

Also there is a developing body of research around electronic commerce in the business-to-business domain (Basu & Kumar, 2002; Benjamin & Wigard, 1995; Berryman et al., 1998; Charlton et al., 1997; Coulson, 1999; Dempsey, Dvorak, Holen, Mark, & Meehan, 1998; Hagel & Armstrong, 1997; Han & Noh, 2000;

Harrison et al., 1997; Hart & Saunders, 1998; Jutla, Bodorik, & Wang, 1999; Kauffman & Walden, 2001; Kyeong & Mee, 2000; Larson, Larson, & Greenlee, 2003; Liu & Arnett, 2000; Mendoza, Griman, Perez, & Rojas, 2002; Min & Galle, 2003; Ojala, 2002; Riggins, 1999; Sagawa, 1997; Torkzadeh & Dhillon, 2002; M Unitt & I.C. Jones, 1999; Wiggins, 2003;). However, there does not appear to be any specific material concerning the implementation of e-business between non-government organisations and government.

While the overall context of electronic commerce in non-government organisations is similar in nature to commercial implementations, there are some unique differences in a non-government to government electronic commerce setting. Often the “profit” or financial driver that is important in a commercial setting is not present in non-government organisation to government electronic interactions. On the other hand, similar to a commercial setting, cost savings and efficiency are key factors for non-government organisations. Also the desire to improve government efficiency in the most cost effective manner and make government more open is leading many governments to pursue internet based technology as a foundation for their e-government initiatives (Commonwealth of Australia, 2002b, 2003a, 2003b).

Research by Shaw (2002), has confirmed, “Information Systems researchers have developed a large base of theoretical and empirical research for investigating information technology and information systems implementation.” However, a “.... majority of prior studies have focused on perceptions, usefulness and support of information systems.” Shaw’s research highlights the need to better understand the factors that influence the effective implementation of technology. Although it does

not present any findings in relation to non-government organisations or government implementations of electronic commerce.

On the other hand, according to Torkzadeh and Dhillon (2002), there have been two main factors that have hindered internet commerce success the first factor is “the rapid development and use of internet technologies.” The second factor is the “lack of conceptual bases necessary to develop success measures.” This is especially relevant for non-government electronic commerce.

2.3 Electronic commerce and Government

In Australia, commercial or business users transacted approximately \$6.2 billion worth of electronic commerce business to business (B2B) transactions in 2001, this represented about 2 percent of Australia’s gross domestic product (Australian Bureau of Statistics, 2001c). International research company International Data Corporation (2002) forecasts Australia’s electronic commerce B2B transactions will reach approximately \$87.1 billion by 2006. Importantly, “Government represents the fastest growing segment in Australia, growing from \$294.7 million to reach \$5.99 billion in 2006”, (IDC, 2002). This appears to be consistent with Australian and State Governments e-business strategies (Commonwealth of Australia, 2002a, 2002b, 2002c, 2003c; Government of Victoria, 2002; Government of Victoria, 1998). With this level of growth forecast it also suggests that governments expect electronic commerce to form an important part of the government’s future operations.

Governments around the world continue to have a desire to improve the services they provide while reducing their cost structures (Commonwealth of Australia, 2002a, 2002b, 2003a, 2003b, 2003c; ETC Electronic Trading Concepts, 2000a; Government

of Victoria, 2002; Government of United States of America, 2002; Government of Victoria, 2001a, 2001b; McDonnell, 2003; New Zealand Government, 2001; United Kingdom Government, 2001). Traditional government service delivery models have often been supported by the use of proven technologies, including: the telephone, fax, and mainframe or mini computers. However, the advent of the Internet provides some unique opportunities to redefine and reposition a range of government services (Commonwealth of Australia, 2003c; Government of United States of America, 2002; New Zealand Government, 2001). Its strengths lie in its relatively low entry costs and its wide penetration into the community (Commonwealth of Australia, 2002b, 2002c; New Zealand Government, 2001). The internet phenomenon continues to grow at a rapid rate (Australian Bureau of Statistics, 2001a, 2001c; Australian Information Industry Association, 2000; Butler Group, 1999). This technology is changing the nature of many routine commercial interactions of governments, business, and consumers. Also, many Western Governments are implementing electronic commerce strategies (Commonwealth of Australia, 2002b; Government of Victoria, 2002; Government of United States of America, 2002; New Zealand Government, 2001; United Kingdom Government, 2001). These strategies often focus on multiple streams including government services, the business sector, communities and citizens.

For example, the Victorian Government launched in late 1999 its “Connecting Victoria” Strategy (Government of Victoria, 1999) outlining six main strategy elements, these are: Building a learning society, growing the industries of the future, boosting electronic commerce, improving infrastructure and access, connecting communities, and promoting a new politics. The use of technology is a common connecting factor in most of these elements. Victoria is one of eight Australian states

and territories. It is situated in south-eastern Australia. While Victoria is the smallest of the mainland states with an area of approximately 227,000 sq. km, it has a population of approximately 5 million. The population is widely dispersed, although the majority of the population are located near major cities and towns. Victoria has strong agricultural and manufacturing industries, a growing information technology industry and continues to be the most industrialised of the Australian states.

More recently the Victorian Minister for Innovation Mr. John Brumby launched “Putting People at the Centre – Government Innovation Working for Victorians” (Government of Victoria, 2002) this Victorian eGovernment strategy has four pillars:

- Sustainability improving support and services to citizens.
- Providing better community engagement and democracy that is more effective.
- Using innovation in finding new opportunities, and
- creating a framework for on-going reform within Government.

Some sub-elements of this strategy include; improving all government services, creating services without borders, giving people access to competing sources of information, and building capabilities within agencies (Government of Victoria, 2002).

Many Governments also recognize the increasing importance of this electronic delivery mechanism (Commonwealth of Australia, 2002b; ETC Electronic Trading Concepts, 2000a; Government of Victoria, 2002; Government of United States of America, 2002; McDonnell, 2003; New Zealand Government, 2001; United Kingdom Government, 2001). The emergence of this new technology-enabled capability will

drive governments to re-evaluate existing service delivery mechanisms and develop new electronic based ways to deliver services. As technology adoption rates will vary, government policy responses will need to balance the digital divide between the information rich and the information poor, and those whether business or citizens that have the capacity to embrace this new technology.

Governments are also keen to embrace this technology as a way of improving service delivery, access to information and reduce costs (Commonwealth of Australia, 2002b; Government of Victoria, 2002; Government of United States of America, 2002; New Zealand Government, 2001; United Kingdom Government, 2001). However, not all early adopters of e-government strategies have reaped their expected benefits (Forrester, 2001).

The emergence of electronic service delivery will allow the development of important new service offerings and relationships. These emerging electronic-relationships will be implemented in many forms. However, according to Forrester (2001) these implementations will often be complex in nature, sometimes difficult to implement, maybe expensive and will vary in perceived value. Never the less, there is a desire by the Victorian Government to provide a range of electronic services to the community (Government of Victoria, 2002; Government of Victoria, 2001a). This is driven by a belief that electronic services will be suitable for a majority of the community and will allow government to save costs and re-engineer inefficient processes, resulting in improved government services.

A sector with the potential to substantially benefit from the introduction of new technology is the Health and Community Services sector. This sector consumes a multi-billion dollar investment annually in Victoria, (Department of Human Services, 2002a) and substantially more nationally. With an aging population, that is living longer and demands a better quality of life, more expensive medical procedures and an increasing health and community services work force to support these changes, the overall amount of dollars needed to support the sector will continue to increase as a proportion of Gross Domestic Product (GDP). e-Government and e-business initiatives provide an opportunity to reengineer processes and reduce costs in this sector.

Government Departments in all Australian states deliver a similar range of Government services. All generally interact with non-government organisations to varying degrees using some form of information technology. The Victorian government's interaction with non-government organisations is considered representative of similar interaction with non-government organisations in other Australian states. Victoria is one of the larger states in terms of state government budget, population, and the number of non-government agencies that interact with the government. Within Victoria, the largest government department that deals with non-government organisations on a regular business-to-business or Government to business arrangement is the Department of Human Services. The Department electronically interacts with the diverse Health and Community services sector and is a good surrogate for typical electronic commerce implementations between non-government and government organisations.

This research determines the factors that influence the level of adoption of electronic commerce at non-government organisations needed for interactions with Government. In particular those non-government organisations in the Health and Community Services sector. Similar to commercial organisations factors involving technology, Internet service providers, security, privacy, cost and skilled staff are likely to be important.

2.3.1 Importance of electronic commerce to Government

The Australian on-line community is continuing to grow according to the Australian Bureau of Statistics survey figures (Australian Bureau of Statistics, 2001b; Australian Information Industry Association, 2000). The number of Australian businesses using computers and the internet is rapidly growing especially in large business (those employing 100 or more staff) suggesting that there is some perceived value in using this technology as a routine part of business operations. However, this was contrasted with very small business (employing fewer than 5 staff) where there was a lower level of technology adoption. The survey noted that the “single biggest reason for Australian businesses not adopting information technology continues to be the perception that the technology is not suited to the nature of the business” (Australian Bureau of Statistics, 2001c).

It is widely acknowledged that the Government’s drive for Government-to-business transactions will assist business-to-business development and therefore economic development for Australia (Boyer, 2001). Although the use of Internet-based technology makes available a range of new business possibilities there are also limitations and risks associated with its adoption and deployment that need to be identified and managed (Agarwal & Prasad, 1999; Berryman et al., 1998; Coulson,

1999; Forrester, 2001; Green, 1998; Han & Noh, 2000; Kauffman & Walden, 2001; Kyeong & Mee, 2000; Liu & Arnett, 2000; V. Zwass, 1996; V Zwass, 1996).

While large commercially-based organisations appear to have readily adopted the technology there is still a general lack of understanding of the issues and concerns in small and medium enterprises. According to the Australian Bureau of Statistics (2001b) there is a “ strong relationship between the employment size of a business and the likelihood that the business is using IT”. In the Health and Community Services sector there is a large amount of small and medium sized agencies. As Kauffman and Walden propose "Electronic commerce is a revolution that many industry and academic observers believe will transform the conduct and structure of business as we know it.” (Kauffman & Walden, 2001).

There appears to be general agreement by a majority of Governments in the western world that the implementation of an e-government model with its associated services will ensure governments remain relevant (Commonwealth of Australia, 2002b; Government of Victoria, 2002; Government of United States of America, 2002; Government of Victoria, 2001a; New Zealand Government, 2001; United Kingdom Government, 2001). Importantly nations wish to maintain a competitive advantage while governments want to reduce cost and offer new services. However some early implementations have not been without their problems (Forrester, 2001). Without anticipating and avoiding these problems the cost and implementation risks to new projects will be extremely high.

The UK Government (United Kingdom Government, 2001) sees eGovernment as an important part of their service delivery strategy although a major emphasis for a number of Government Departments appears to be centred around private sector partnerships and the joint establishment of revenue generating opportunities from either aggregated information that could be on-sold or transactional activities. However a Forrester Report (2001) suggests, “The UK government’s aggressive eCommerce plans won’t come to fruition. To get close to their 2005 on-line goals, government will forge new partnerships that create revenue opportunities for private-sector firms”. The report goes on to note that it is widely acknowledged the Government is unlikely to meet its 2005 target of 100% of electronic services to business and consumers citing “.... Deep-seated cultural issues and unwieldy procurement processes as stumbling blocks for government moving on-line.”

The New Zealand Government (2001) sees eGovernment as a fundamental strategy in the reform of government services. A recent report proposes, “As a society starts to deal (access and interact) with government through multiple channels it will lessen some of society’s divisions”. The Internet is a major component of the “access and interact” part of the strategy. The strategy further recognizes the importance of eGovernment as a catalyst for business growth and suggests that “– the move towards on-line government to business transactions will support the growth of business to business e-commerce”.

Australia recognizes an information-based economy that grows and supports new technology as an important piece of a new “silk road”. The growth of both industries and services based on this is essential for success. Government has an important

leadership role to play (Commonwealth of Australia, 1999). The notion of e-Government or Government enabled by technology is important in facilitating business involvement. The “e” in electronic is as much about enablement and therefore process reengineering as it is about technology. The Commonwealth government has a large number of ‘e’ projects underway (Commonwealth of Australia, 2002a, 2002b, 2002c, 2003a, 2003b, 2003c). However not all will be successful.

The Victorian Government has recently released its new Innovation Strategy (Government of Victoria, 2002), which clearly positions technology, industry and people at its centre. The implementation of the strategy will be entrusted to each of the Government Departments. Each Department will confront a range of implementation issues, and not all will be the same for each Department.

Although "Governments do not manufacture anything, they produce and disseminate vast amounts of information across an extensive geographical area. Thus e-commerce technologies are likely to have more influence on how governments operate than on most businesses.... The e-commerce considerations of a government are not likely to be the same as those of a firm." (Kauffman & Walden, 2001).

2.3.2 Government to Business Factors

While major barriers or key challenges to be overcome and that may inhibit the uptake or adoption of electronic commerce in non-government organisations are likely to be those that are experienced by the wider business community, a number of studies (Agarwal & Prasad, 1999; Basu & Kumar, 2002; Choudhury et al., 1998; Chwelos et al., 2001; DeLone & McLean, 2003; Fenech, 1998; Ghorab, 1997; Han &

Noh, 2000; Harrison et al., 1997; Hart & Saunders, 1998; Karahanna et al., 1999; Kenjale, 2003; Larson et al., 2003; Liu & Arnett, 2000; McClure, Moen, & Bertot, 1999; Miller, 2003; Min & Galle, 2003; Riggins, 1999; Stewart & Segars, 2002; Torkzadeh & Dhillon, 2002; M. Unitt & I. C. Jones, 1999; V. Zwass, 1996) have cited these as being:

- Equipment and capability
- Shortage of skilled staff
- Scale of operation (geographic spread) and limited finances
- Lack of competitive Internet Service Provider's
- Telecommunication tariffs

It is essential for governments to understand the barriers and enablers of electronic commerce if they are committed to implementing their e-government strategies. Furthermore as each administrative unit of the government, Departments execute their e-government strategies it is necessary for them to understand the barriers and enablers of this new technology within the context of their service delivery responsibilities.

2.4 Electronic Commerce Technologies

To make reading this research as clear as possible, the following terms are defined and used in the following context:

- EDI (Electronic Data Interchange) is the controlled transfer of data between organisations by established security standards.

- Email means interpersonal and world wide communication of electronic messages and files.
- Encryption, the encryption process encodes the data in a way that only the sender and the target recipient can understand. Most encryption schemes use an algorithm and one or two keys. The algorithm is used with the key to scramble the data in a unique way.
- FTP File transfers mean a way to upload or download data and software to and from Internet hosts.
- Internet service provider (ISP) sells connections to the internet.
- Intranet is an internet network located inside an organisation that is not usually accessible by the general public. It is based on the same technology as the Internet.
- SSL (secure sockets layer) provides security for the data packets at the network layer.
- VPN (Virtual Private Network) allows users to access and use secured bandwidth through their internet connection, without the need for dedicated network connections.
- XML (extensible mark-up language) an industry standard for data exchange.

2.5 Drivers of Electronic Commerce

The drivers for adoption of electronic commerce, or why organisations are implementing electronic commerce are important factors to understand, as they provide a context to the momentum that will determine whether organisations embrace electronic commerce. Overall the delivery of electronic based services is

becoming increasingly important for many organisations (Benjamin & Wigard, 1995; Berryman et al., 1998; Butler & Power, 1999; Coulson, 1999; DeLone & McLean, 2003; *Framework for Electronic Commerce on the Internet*, 1997; Gartner Group, 1999; Hagel & Armstrong, 1997; Hart & Saunders, 1998; Min & Galle, 2003; Tapscott, 1999; Torkzadeh & Dhillon, 2002). Often, the drivers of electronic commerce can be categorised into three broad areas:

- Efficiency or doing more with less. That is, the ability to serve more ‘customers’ or community members at the same or reduced cost.
- Effectiveness or a focus on service outcomes. A desire to increase the number of services offered with the ability to better target these services. Electronic service delivery for selected services is a more consistent, accurate and flexible delivery medium.
- Empowerment or helping people do more for themselves. The nature of this type of delivery mechanism enables greater user self-sufficiency and flexibility with access to services.

A report commissioned by a leading Government Department reviewing factors influencing the adoption of electronic commerce by members of the Municipal Association of Victoria (ETC Electronic Trading Concepts, 2000a) identified a number of drivers, barriers and enablers. These are summarized as:

- Increasing customer expectations
- Responsiveness
- Efficiency
- Economic protection
- Leadership

These factors are similar to other studies about electronic commerce. Berryman (Berryman et al., 1998) in examining three electronic commerce market place models controlled by sellers, buyers and neutral third parties, proposed the main driver of electronic commerce was the release of value through transaction savings and the necessary shift of power to buyers. In a non-government electronic commerce setting these factors would be efficiency, responsiveness and meeting increasing customer or citizen expectations.

2.6 Barriers of Electronic Commerce

According to a recent Government report (ETC Electronic Trading Concepts, 2000a, 2000b) (ETC Electronic Trading Concepts, 2000a) and other studies (Basu & Kumar, 2002; Berryman et al., 1998; Butler & Power, 1999; Chattell, 1998; Choudhury et al., 1998; Chwelos et al., 2001; Commonwealth of Australia, 2002d, 2002e; Dempsey et al., 1998; Dyke, Kappelman, & Prybutok, 1997; Forrester, 2001; Green, 1998; Han & Noh, 2000; Harrison et al., 1997; Igarria & Tan, 1997; Igarria et al., 1997; Karahanna et al., 1999; Kettinger & Lee, 1997; Kyeong & Mee, 2000; Larson et al., 2003; Lowry et al., 1999; Min & Galle, 2003; Stewart & Segars, 2002; V. Zwass, 1996) the major barriers to the adoption of electronic commerce by organisations can be grouped into three broad categories: technology related barriers, organisational related barriers and the business environment related barriers. These studies have identified a number of important barriers.

Major technology barriers include the following factors:

- Lack of backend system integration. Therefore new systems do not create very much organisational efficiency.

- Security and privacy are important challenges that need to be adequately handled as a lot of these organisation's data is very sensitive in nature.

Many key organisational barriers have been identified including:

- Inadequate funds: both capital for the initial implementation of electronic commerce, and the allocation of sufficient recurrent funds for on-going maintenance and support.
- The organisational capability to adequately manage the implementation risks associated with the introduction of electronic commerce.
- The lack of skilled staff to support the implementation and on-going support of electronic commerce or the availability of skilled staff to recruit for implementation and support.
- The state of existing systems. Often existing systems are not easily adaptable to electronic commerce use. Therefore new systems need to be developed and these are often expensive and require a new investment.
- A low level of electronic commerce awareness by management and staff means that support for the investment in new projects is difficult. Also even when projects are sponsored the adoption of the system by staff may be relatively slow.
- Doubts or concerns about the viability of the Internet technology impacts on both investments and organisational support for electronic commerce initiatives.
- The development and approval of a business case to invest in electronic commerce. A business case typically contains details of what is proposed and includes costs and benefits of the investment. Often the development of

compelling benefits is less clear with electronic commerce. This is often the case because electronic commerce enables new service delivery channels rather than automating an existing process. This means that estimating realisable benefits is difficult.

While often major business environment barriers are described as:

- Poor telecommunications infrastructure. This means that either sufficient bandwidth is not available to meet business application needs or the telecommunications service is unreliable. In some areas there is no Internet telecommunications infrastructure available at all.
- Unclear business benefits. While there appears to be general agreement that electronic commerce has benefits, these benefits are not always clear.
- The availability of staff in the market place with the necessary electronic commerce implementation skills.
- High telecommunication tariffs have the potential to block the wider use and uptake of the electronic commerce.
- High cost of Internet service provider services has the potential to constrain the wider use and uptake of electronic commerce.

While Zwass (1996) concludes that the “problematic areas of e-commerce include infrastructure limitations and asymmetries, the integration of electronic payments into the buying process, business governance and new intermediation.”

On the other hand as part of a model that proposes satisfaction, usage and expectations of electronic commerce usefulness as its basis data security and system security were identified as potential barriers by Han and Noh (2000).

These factors fit into the categories of organisational, technology or the business environment the organisation operates within.

2.7 Enablers of Electronic Commerce

Key enablers or key success factors for the implementation of electronic commerce can be categorized into three distinct groups: technology enablers, organisational enablers or environmental enablers (ETC Electronic Trading Concepts, 2000a). These factors are required to assist the uptake or adoption of electronic commerce in local government organisations. While other studies (Bajaj & Nidumolu, 1998; Basu & Kumar, 2002; Benjamin & Wigard, 1995; Berryman et al., 1998; Butler Group, 1999; Chattell, 1998; Choudhury et al., 1998; Chwelos et al., 2001; DeLone & McLean, 2003; Fenech, 1998; Ghorab, 1997; Harrison et al., 1997; Hart & Saunders, 1998; Hitt & Brynjolfsson, 1995; Hu et al., 1999; Igbaria et al., 1997; Karahanna et al., 1999; Kauffman & Walden, 2001; Koufaris, 2002; Larson et al., 2003; Liu & Arnett, 2000; Lowry et al., 1999; Maxwell, 1999; McClure et al., 1999; Min & Galle, 2003; Moore & Benbasat, 1991; Riggins, 1999; Shaw, 2002; Stewart & Segars, 2002; Torkzadeh & Dhillon, 2002; West, 2003; Wiggins, 2003) have identified a number of important factors that enable or assist the implementation of electronic commerce.

The major technology enablers include:

- Electronic commerce technology needed to secure transactions while travelling over the internet.

- Electronic commerce technology to ensure the necessary authentication of transactions.
- Electronic commerce technology to ensure the non-repudiation of electronic transactions.
- The availability of electronic commerce cost effective payment engines that can process financial transactions.

While key organisational enablers are often identified as:

- Senior management support to drive organisational change using electronic commerce as a lever.
- Staff with the necessary skills to implement and then support electronic commerce.
- Available funds.

With the major business environment enablers described as:

- Available and competitive Internet service providers (ISP) services.
- Available telecommunications infrastructure.

Also basic interoperability standards for the exchange of data between organisations are emerging as a key requirement for electronic commerce. According to Basu and Kumar (2002) “ Many XML-based standards are now beginning to emerge for e-commerce from recent developments in Internet technology...” On the other hand they also claim “In the volatile, dynamic context of e-business, these problems become not only more complex, but their solutions also become critical determinants of success.” (Basu & Kumar, 2002; Min & Galle, 2003).

2.8 Government Departments Electronic Commerce

The Department of Human Services is primarily responsible for a range of people-related services. These services are either directly delivered by the Department or delivered by intermediaries, funded non-government agencies. The department consists of 7 Program areas; Metropolitan Health and Aged Care Services, Rural Health and Aged Care Services, Disability Services, Community Care, Office of Housing and Community Building, Operations and Finance and Corporate Services (Department of Human Services, 2001a).

The Department is responsible for the provision of a wide range of services to the Victorian community including:

- High quality and efficient health care services through the Victorian public hospital system, community health centres and ambulance services.
- Residential and rehabilitation care for older and disabled Victorians.
- Secure, affordable and appropriate housing to low income Victorians and improvement of crisis accommodation and support for homeless Victorians.
- A wide range of health, welfare and community services for Victorian families.
- Promoting health and preventing illness, disability and distress within the Victorian community.
- Victorian Government concessions to low-income groups to improve the affordability of key essential services.

The Department allocates approximately \$6 billion annually for a range of services to non-government organisations (Department of Human Services, 2002b). These

organisations are also referred to as “funded agencies” (Department of Human Services, 2001b).

For each activity funding allocation made by the Department to a funded agency, there is usually a data collection requirement. These data collection requirements include performance measures and associated targets and are referenced in Service Agreement Service Plans. In some cases data collections comprise a report of performance measures only. Often, performance measures are derived from the data collection, which may be used for other purposes in addition to performance reporting.

The difficulties with the data collection process are identified in the March 2000 review (Department of Human Services, 2001b). Some extracts from that report are set out below:

In relation to the exchange of data between the Department of Human Services and non-government organisations the report confirms that data is collected in a number of ways. A broad analysis of the collection of reporting data from non-government agencies suggests the following breakdown; 75% of collections were paper or diskette based with mailing being the means of exchange of information. A relatively smaller number used e-mail, 24%, and surprisingly only 1% of agencies had a direct link (Department of Human Services, 2001b).

This would seem to suggest that there is a relatively low amount of electronic communication between the Department and these non-government organisations and

therefore some opportunities to improve these processes. The Government's drive for Government-to-business transactions will continue to assist business-to-business development. Any insight into the factors that influence the level of adoption of electronic commerce by non-government organisations needed for interaction with Government may be considered important.

2.9 Non-government organisations

Non-government organisations play an important part in the overall delivery in necessary health and community services. The services these type of organisations provide in the Health and Community Services sector (Department of Human Services, 2002a) are:

- Primary Health services
- Mental Health services
- Disease, Prevention Control Surveillance
- Disability Services
- Coordinated and Home Care services
- Community Services
- Aged Care services
- Acute Health services

Often these organisations receive most of their financial funding from government with small amounts sometimes through public donations. Many of these organisations are relatively poorly funded, with most of their budgets being directed to labour costs and if they are a health services organisation then also to medical equipment. Local

government also provides some of the community services such as aged care services, community health services and public health services.

2.10 Variables identified from the literature

There were a number of key electronic commerce implementation factors identified in the literature (Basu & Kumar, 2002; Berryman et al., 1998; Choudhury et al., 1998; Chwelos et al., 2001; Commonwealth of Australia, 2002d, 2002e; DeLone & McLean, 2003; Dempsey et al., 1998; Harrison et al., 1997; Hart & Saunders, 1998; Hu et al., 1999; Igbaria et al., 1997; Karahanna et al., 1999; Kauffman & Walden, 2001; Kyeong & Mee, 2000; Larson et al., 2003; Liu & Arnett, 2000; Lowry et al., 1999; Lucas, 1999; Mathieson, 1991; McClure et al., 1999; Mendoza et al., 2002; Min & Galle, 2003; Riggins, 1999; Shaw, 2002; Stewart & Segars, 2002; Tapscott, 1999; Thorp, 1998; Torkzadeh & Dhillon, 2002; M. Unitt & I. C. Jones, 1999; West, 2003; Wiggins, 2003; V. Zwass, 1996). Also Han and Noh (Han & Noh, 2000) proposed a useful model that consolidated a number of electronic commerce factors. Therefore after careful consideration of the factors proposed by all of these authors the following summary table (Table 2.1 below) was developed.

Table 2.1 Electronic Commerce Variables from the literature review

Variables identified from the Literature	
e-commerce Drivers	
D1	increasing community expectations
D2	perceived economic advantage
D3	increasing service responsiveness
D4	organisational efficiency
D5	process efficiency
D6	business leadership positioning
D7	need for collaboration between organisations
D8	cost structure advantage
D9	opportunity for service advantage
D10	organisational cultural change - focus on customer service
D11	trading partner requirement
D12	perceived importance of e-commerce
e-commerce Enablers	
E1	organisation capabilities
E2	available ISP services
E3	telecommunications infrastructure
E4	financial resources / government funding / tax incentives
E5	rise of the perceived importance of e-business
E6	skilled staff to implement technology
E7	skilled staff to support technology
E8	available organisational funds
E9	secure transactions technology
E10	authentication of transactions technology
E11	non-repudiation of electronic transactions technology
E12	the availability of cost-effective payment engines
E13	organisational / CEO leadership
E14	ease of integration with existing systems
e-commerce Barriers	
B1	equipment availability and equipment capability
B2	shortage of skilled staff (market place)
B3	scale of operation geographic spread
B4	available financial resources
B5	perceived need for service aggregation (shared services)
B6	inadequate funds capital
B7	inadequate funds recurrentstate of existing systems
B8	lack of skilled staff (organisation)
B9	low level of technology awareness by management
B10	low level of technology awareness by staff
B11	doubts about the viability of the internet technology for business use
B12	inadequate funds - capital
B13	inadequate funds - recurrent
B14	state of existing systems
B15	lack of competitive Internet service providers
B16	telecommunications tarriffs
B17	poor telecommunications infrastructure
B18	senior management support
B19	poor technology planning
B20	perceived low value about using the technology
B21	perceived security risks
B22	perceived privacy risks

2.11 Research Model

The variables identified in the literature and the semi-structured interviews have been used to inform the development of a research model detailed below in Figure 2.1. The model comprises of three key elements that together influence the level of adoption of electronic commerce at non-government organisations needed for electronic interactions with Government. The drivers are the factors that influence why these non-government organisations are implementing electronic commerce. The barriers are the factors that have to be overcome or it will stop or impede the implementation of this technology in these organisations. The enablers are the factors that allow or substantially assist these non-government organisations to successfully implement electronic commerce. Once the barriers are clearly identified strategies can be formulated to overcome or negate these factors. While once key enablers are identified further attention can be focused on support and extend these factors further. Each key element comprises of a number of key factors that have been identified in the literature.

The drivers are divided into 2 key types:

- organisational capability factors including the perceived business need to implement electronic commerce and
- business environment factors trading partner (government) requirements (Basu & Kumar, 2002) and the information exchange requirements from the industry the organisation operates within (Basu & Kumar, 2002).

The enablers are divided into 3 key types:

- organisational factors including the benefits from implementing electronic commerce, the capabilities of the organisation to implement and use electronic commerce, the support of senior management to invest in electronic commerce and to guide its implementation and use (DeLone & McLean, 2003; Hart & Saunders, 1998; Hope & Hope, 1997; Liu & Arnett, 2000; Min & Galle, 2003; Torkzadeh & Dhillon, 2002) and the ability of electronic commerce to enable new types of service models (Benjamin & Wigard, 1995; Chattell, 1998; DeLone & McLean, 2003),
- technology factors including the availability of the technology in the organisation (Shaw, 2002) and
- business environment factors including the availability of electronic commerce infrastructure external to the organisation. Particularly internet service providers that are reliable and reasonably price their services (Kyeong & Mee, 2000). Also the availability and the reasonable cost of telecommunications tariffs are important.

The barriers are divided into 3 key types:

- organisational capability factors including the availability of adequate resources to implement and maintain electronic commerce also the management of implementation risk (Han & Noh, 2000) through awareness and adequate methods and processes are essential,
- technology factors including backend system integration also security and privacy (Commonwealth of Australia, 2002d, 2002e; Larson et al., 2003; Stewart & Segars, 2002) and finally,

- business environment factors including available technology infrastructure for electronic commerce within the organisation (Han & Noh, 2000), the skills and capabilities of staff to implement and maintain electronic commerce and acknowledged business benefits from implementing electronic commerce (Liu & Arnett, 2000; Rai et al., 2002; Torkzadeh & Dhillon, 2002).

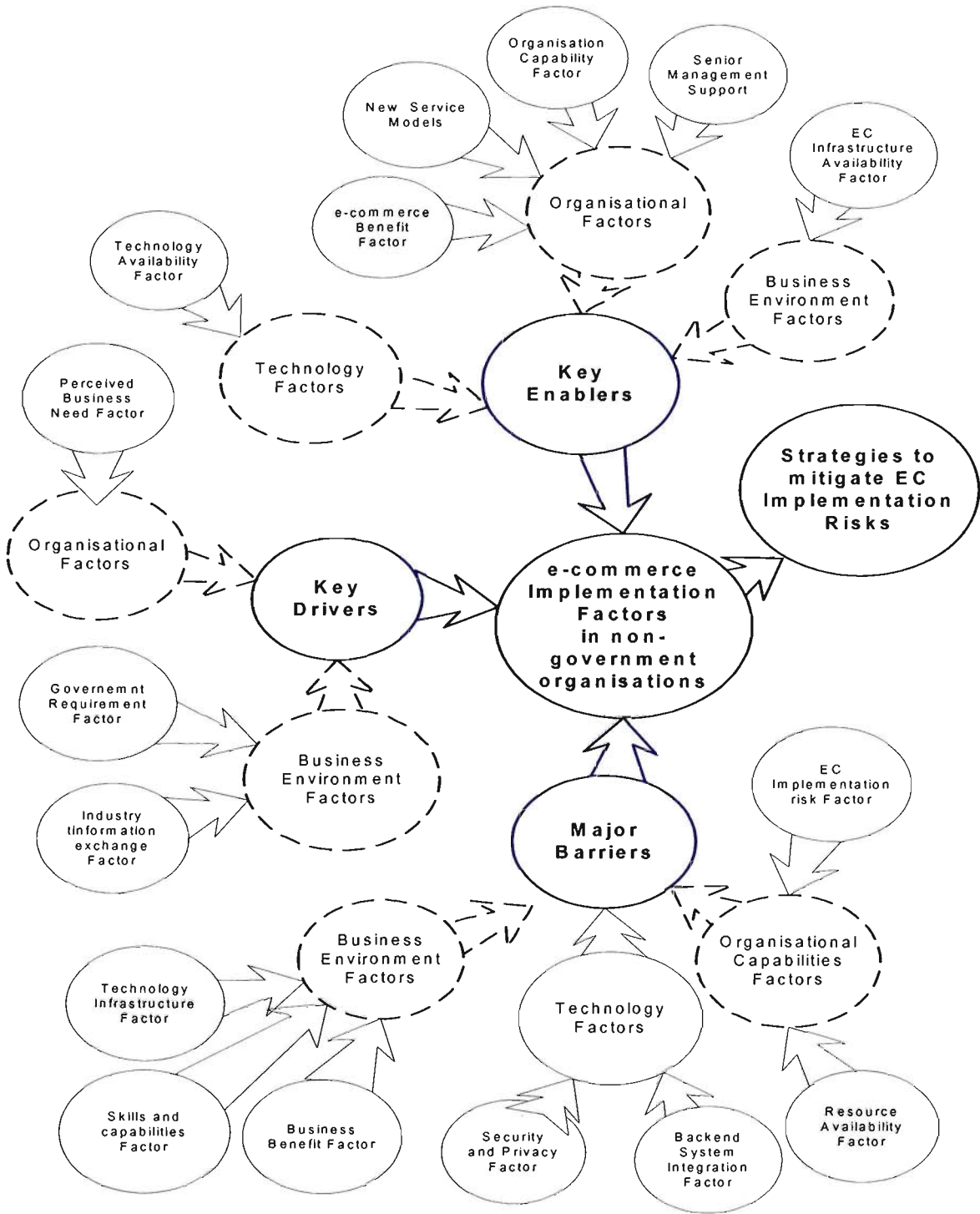


Figure 2.1 Research Model Electronic Commerce implementation Factors

The research model above (Figure 2.1) was developed from the key factors identified in the literature and the semi-structured interviews conducted with 6 non-government organisations and the (see Chapter 5). To confirm their relevance for non-government organisations these factors were used as the basis for further investigation in the subsequent phase of the research the (see Chapter 5) survey questionnaire of non-government organisations.

2.12 Conclusion

This chapter has highlighted that while there is a large body of knowledge about electronic commerce and growing body of knowledge developing around e-government there appears to be little specific research into the electronic commerce implementation in non-government organisations that interact on a regular basis with government.

This review has identified a number of key drivers, barriers and enablers to the implementation of electronic commerce and while these have not been specifically linked to non-government organisations, they do provide a strong basis to commence the second (semi-structured interviews) and third (questionnaire survey) phases of this research. The model that has been developed as a product of the literature review will be used to guide this research, and inform the development of the data collection instruments required in the next two phases.

A number of factors have been identified from the literature including key drivers that are: government (trading partner) requirements, to improve organisational efficiency or improve customer service. The barriers to the implementation of electronic

commerce have been centred on organisational, technology or the business environment factors, with the enablers also fitting into these three broad categories.

The next Chapter provides details about the research methodologies designed to capture the necessary data to inform the research questions identified in Section 1.9.

CHAPTER THREE RESEARCH METHODOLOGIES

3.1 Introduction

This research aimed to identify the key factors for implementation of electronic commerce between non-government organisations and Government. In this chapter the research methodologies used to explore this important issue will be discussed. The research methodology was designed to answer the research questions presented in Section 1.9.

Multiple research strategies are used to investigate, explain and inform the research aims. The findings of this research will be important to both non-government and government organisations wishing to implement forms of electronic commerce. A better understanding of these factors will lessen implementation risks.

This chapter is structured in the following manner: Section 3.2 presents the research questions, Section 3.3 an overview of the research method, Section 3.4 depicts the theoretical framework guiding the research. Section 3.5 provides details of the literature review, while Section 3.6 discusses the semi-structured interviews phase followed by Section 3.7 highlighting the approach to the analysis of the semi-structure interviews. Section 3.8 lists relevant assumptions, while Section 3.9 notes limitations of the semi-structured interview method. Section 3.10 presents details of the approach to data collection confidentiality, security and non-disclosure arrangements.

Section 3.11 describes the survey method, 3.12 the questionnaire sample frame. Section 3.13 provides details about constructing the questionnaire, while Section 3.14

describes the administration of the questionnaire with Section 3.15 providing details of the final questionnaire. Section 3.16 identifies the limitations of the postal questionnaire while Section 3.17 presents the approach to information confidentiality. Section 3.18 provides details about the questionnaire and accompanying letters, Section 3.19 reflects the questionnaire response, while Section 3.20 provides the postal questionnaire survey analysis and finally Section 3.21 provides a conclusion for the chapter.

3.2 The Research Questions

The research questions were:

- What are the factors that influence the adoption of electronic commerce in non-government organisations? (These factors are determined by the following sub-questions.)
- What is the key implementation issue that affects the uptake of electronic commerce technology in these organisations?
- What are the key drivers for adoption of this technology?
- What are the major barriers that inhibit the adoption of electronic commerce?
- What are key enablers for effective adoption of electronic commerce?

3.3 Overview of the Research Method

To achieve the research aims (Section 1.8) both qualitative and quantitative research methods were applied. The research questions (Section 3.2) were developed from the research aims below.

The five specific aims of this important research were to:

- Determine the factors that influence the adoption of electronic commerce. (These factors are determined by the following aims.)
- Determine the key implementation issues that impact the uptake of electronic commerce.
- Determine the key drivers for adoption of electronic commerce, (or why are these organisations' doing this).
- Determine the major barriers that inhibit the adoption of electronic commerce (or what has to be overcome or it will stop the adoption of electronic commerce in these organisations).
- Determine key enablers for effective adoption of electronic commerce (or what assists or makes easier the implementation of electronic commerce).

The key enablers identified by this study were the major contribution to knowledge of this research.

A review of the literature (Chapter 2) has confirmed that there is a growing body of knowledge about electronic commerce however it has focused on electronic commerce in business-to-business settings. On the other hand, it also highlighted that there is very little understanding of electronic commerce in a non-government organisation to Government setting.

Government Departments in many countries and all Australian states deliver a similar range of Government services. All generally interact with non-government organisations to varying degrees using some form of information technology. The

electronic interaction of Victorian non-government organisations with government's is considered representative of similar electronic interaction between non-government organisations in other Australian states. Victoria is one of the larger states in terms of state government budget, population, and the number of non-government agencies that interact with the government. Within Victoria, the largest government department that deals with non-government organisations in a regular business-to-business or Government-to-business arrangement is the Department of Human Services. The Department electronically interacts with a diverse Health and Community services sector and is a good surrogate for typical electronic commerce implementations between non-government and government organisations.

Three research strategies were undertaken to gather the appropriate data to address the research aims. The research was accomplished by the following four phases.

Literature review (Phase One)

Initially, a review of the literature to identify the major issues, key drivers, key enablers and major barriers to the implementation of electronic commerce was undertaken. This phase was used to inform the development of an initial script for the exploratory semi-structured interviews that were conducted in phase two.

Face to face semi-structured interviews (Phase Two)

Exploratory research was undertaken in the form of interviews with those responsible for electronic commerce in non-government organisations. Exploratory research was necessary as there was a limited amount of knowledge about this research area. This

second phase (together with the Phase One literature review) was used to inform the development of a questionnaire used in the following phase (Phase Three).

Postal Questionnaire (Phase Three)

This phase focused on gathering data by postal questionnaire. In this phase, government funded, non-government organisations that interact with government in an electronic commerce business-to-Government arrangement were surveyed.

Postal questionnaires were most appropriate and were used in this phase as the sample frame was widely geographically dispersed across Victoria and to visit each one would have been extremely time consuming and expensive.

Both the semi-structured interviews (Phase Two) and survey research in the form of a postal survey (Phase Three) were designed to capture data that was needed to inform the research aims.

Data Analysis (Phase Four)

This phase focused on data analysis and combining the findings from Phases two and three. This phase also involved data analysis of the questionnaires (Phase Three) to answer the research aims by using appropriate statistical tests, which were relevant for ordinal data. The statistical tests involved the development and use of summated index scales and descriptive statistics such as frequency tables. The tests also included tests to assist scale development and reliability.

The dependent variable was the factors that determine the effective adoption of electronic commerce in non-government organisations needed for interactions between the government and non-government organisations in the Victorian health and community services sector. The independent variables were: key drivers, major barriers and key enablers.

The findings of this phase (Four) were combined with the findings from the interviews in (Phase Two) to establish the factors that determine the effective adoption of electronic commerce at non-government organisations needed for interactions between non-government and government organisations. These findings were used post-analysis to address the research aims.

3.4 Theoretical Framework

Based on the literature review and using content analysis a list of drivers, barriers and enablers related to electronic commerce were developed (refer to Table 2.1 in Chapter 2). The list formed the basis of the exploratory phase of this research; the semi-structured interviews of this investigation. Interviews were conducted with either Chief Information Officers (CIOs) or Information Technology Directors from 6 non-government organisations.

After the analysis of the data collected from the interviews a revised list of drivers, barriers and enablers relating to electronic commerce was developed. This revised list formed the basis of the questionnaire that was subsequently developed. A survey questionnaire was sent to non-government organisations.

The analysis of the data gathered through both the semi-structured interviews and the survey questionnaire was undertaken within the context of the theoretical framework depicted in Figure 3.1 below.

Research Framework to identify key factors for e-commerce between non-government organisations and Government

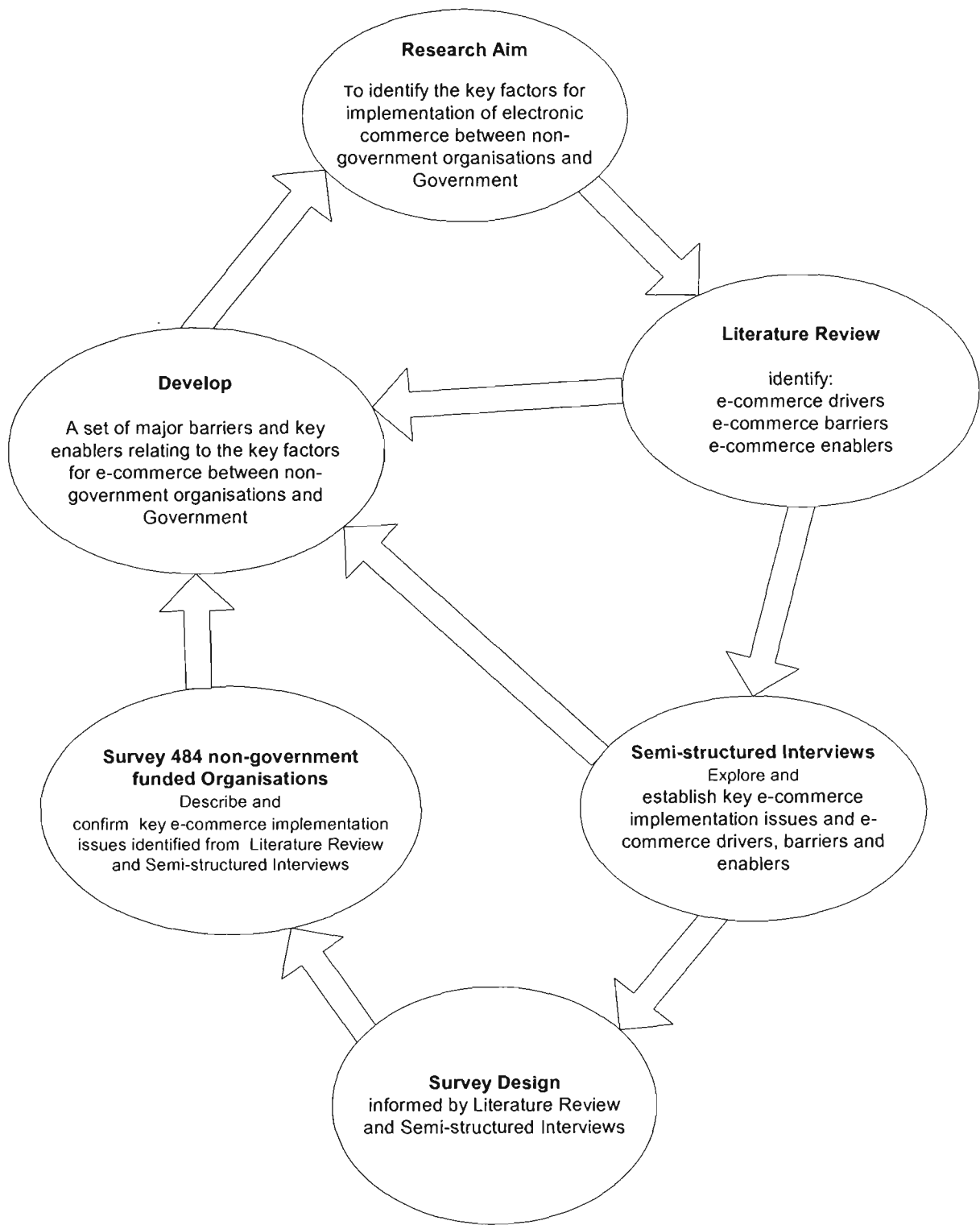


Figure 3.1 Research Framework – electronic commerce adoption by non-government organisations

3.5 Research Method - Literature Review Phase

The first phase of the research involved an extensive review of the literature to establish the state of knowledge and nature of prior theory related to this area of study. Of particular interest were any previous studies in this problem domain. Further attention was given to any studies in similar domains including the adoption of technology, the diffusion of technology and the traditional use of information technology. This stage identified from the literature the major variables that determine the effective adoption of electronic commerce including key issues, key drivers, major barriers and key enablers that were examined for relevance during the semi-structured interviews in Phase 2. The major factors identified from the literature are represented in Chapter 2, Table 2.1. There are three categories of factors, electronic commerce drivers, electronic commerce barriers and electronic commerce enablers. The relevance of these factors was explored in both phase 2 (semi-structured interviews) and phase 3 (survey). There was expected to be some additions and possibly some deletions from the initial finding from the literature.

The major drivers of electronic commerce were identified as:

- the increasing expectations of the community,
- the perceived economic advantage to be gained by using electronic commerce,
- a need to increase service responsiveness,
- to improve organisational efficiency,
- to increase process efficiency,
- positioning to gain business leadership,
- the need for collaboration between organisations,
- to gain a cost structure advantage,

- to gain an opportunity for service advantage,
- to drive organisational cultural change that is a focus on customer service,
- a requirement of a trading partner and
- to support the perceived importance of electronic commerce.

The major barriers of electronic commerce were identified as:

- the organisation's electronic commerce capabilities,
- available ISP services (ISP),
- telecommunications infrastructure,
- financial resources (including government funding, tax incentives),
- the rise of the perceived importance of e-business,
- sufficient skilled staff to implement electronic commerce,
- sufficient skilled staff to support electronic commerce,
- the necessary available organisational funds,
- electronic commerce secure transactions technology,
- electronic commerce authentication of transactions technology,
- electronic commerce non-repudiation of electronic transactions technology,
- the availability of cost-effective payment engines for electronic commerce,
- senior management leadership in the use of electronic commerce and
- the ease of integration of electronic commerce with existing systems.

The major enablers of electronic commerce were identified as:

- electronic commerce equipment availability and capability,
- being able to recruit the necessary skilled staff for the implementation and support of electronic commerce,

- being able to support the scale of business operations geographic spread particularly if each location requires access to electronic commerce,
- having sufficient available financial resources,
- having adequate capital funds and adequate recurrent funds to support the implementation and on-going operation of electronic commerce.
- the ability of existing systems to easily integrate with electronic commerce systems,
- having the necessary skilled staff,
- having a high level of electronic commerce awareness by management,
- having a high level of electronic commerce awareness by staff,
- having non doubts about the viability of electronic commerce for business use,
- having access to competitive Internet service providers (ISP),
- having access to telecommunications tariffs,
- having good telecommunications infrastructure available,
- senior management support,
- having good organisational technology planning,
- having no perceived security risks and having no perceived privacy risks.

The findings of the literature review (Table 2.1 Electronic Commerce Variables) identified a number of key drivers, barriers and enablers of electronic commerce.

3.6 Semi-Structured Interviews

The second phase of this research involved face-to-face semi-structured interviews with six Chief Information Officers (CIOs) or Information Technology Managers from non-government organisations in the health and community services sector.

These organisations were located in and serviced either metropolitan Melbourne or rural Victoria. Each of these organisations used some form of electronic commerce to interact with government. Interviews were conducted during March and April 2003.

Exploratory research was undertaken in this phase, as there was a limited amount of knowledge about the research topic. Interviews were conducted with those responsible for electronic commerce to probe and identify issues, enablers, and barriers that are related to the implementation and use of electronic commerce in these organisations.

Judgemental sampling was employed in this phase. Judgemental sampling “involves the choice of subjects that are in the best position to provide the information required.” (Sekaran, 1992). The advantage of this method is “it is the only viable sampling method for obtaining the type of information that is required from very specific pockets of people who possess the knowledge and give the information sought.” (Sekaran, 1992). Ten organisations were approached to determine those that were willing to be interviewed. Four organisations declined to participate in this study while six organisations accepted. A sample of no less than six organisations was required to gather a sufficient cross section of issues and data concerning the implementation of electronic commerce in a non-government organisation setting. Before each interview, the researcher sent the interview script to each interviewee. With the interviewees permission all interviews were recorded to tape and later transcribed.

After the initial script was produced, there was a pilot-test to ensure questions were clear, precise and bias free. After a revision to some questions the interview script was finalised. Then the semi-structured interviews were conducted.

Open-ended questions were used at interview to allow for deeper inquiry and to gain a greater insight into the issues being investigated. Open-ended questions allowed greater exploration of the issues and follow-up questions if needed. The semi-structured interviews were intended to gather:

- Organisational profile
- Organisational services
- Profile of all interactions with any Victorian Government Department
- Profile of the interaction with Department of Human Services
- Current electronic commerce activities
- Electronic commerce issues, drivers, enablers, barriers
- Other issues the respondent believed were relevant

At the end of this phase, data content analysis was conducted and used to further inform the development of the questionnaire that was used in Phase 3.

3.7 Analysis of the Semi-Structure Interviews

The semi-structured interviews were analysed using content analysis to identify the major drivers, major enablers and major barriers for adoption of electronic commerce between non-government organisations and government.

Content analysis was considered appropriate because it "is used when you want to analyse a written or spoken record for the occurrence of specific categories of events." (Bordens & Abbott, 1999).

According to Holsti, (1969) proper content analysis has three defining characteristics. It must be objective. Each step of the analysis should be guided by a clear set of rules detailing how information will be obtained categorized and quantified. The content analysis should be systematic by assigning information categories based on the developed rules. Finally content analysis should have generality. That is the findings should fit within a theoretical or applied context.

However, content analysis does have some limitations that should be borne in mind when using it. It is purely descriptive, and cannot establish causal relationships among variables. Also another limitation has been "the durability of the findings. In some instances, results from a content analysis are invalidated over time." (Bordens & Abbott, 1999).

The data from the semi-structured interviews and its analysis are presented in Chapter four.

The findings from the literature review (chapter two) and the semi-structured interviews (chapter four) provided the basis for the third phase of research, the survey of non-government organisations in the health and community services sector (chapter five).

The analysis of data from the semi-structured interviews assisted the identification of key drivers, enablers, barriers and issues that are related to the implementation of electronic commerce in the health and community services sector. These were investigated further in phase three (survey) of the research. This phase of the research established:

- The factors that influence the adoption of electronic commerce.
- The key implementation issues that impact on the uptake of the electronic commerce technology in these organisations.
- The key drivers for adoption of this technology.
- The major barriers that inhibit the adoption of electronic commerce.
- The key enablers for effective adoption of electronic commerce.

3.8 Semi-structured interview Assumptions

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

- The organisations participating in the semi-structured interviews were a fair representation of typical non-government organisations in the health and community services sector.
- The interviewees were the most appropriate persons in their organisation to have the best understanding of the use and issues associated with the implementation of electronic commerce between their organisation and government.
- Respondents understood the questions within the intended context asked by the investigator.
- Respondents answered questions truthfully and sincerely.

- The investigator was sensitive to the many possible sources of bias when conducting face-to-face interviews.

3.9 Limitations of the Semi-Structured Interview Method

There were some limitations of face-to-face semi-structured interviews considered as part of the planning and execution of this phase:

- The willingness for participants to honestly and fully disclose issues they had in implementing electronic commerce potentially limited the data they supplied.
- The presence of the interviewer may affect responses from participants.
- Subtle changes in the way questions were asked may elicit different answers from participants.
- Interviewees could bias the data if they do not give their true opinions.
- If respondents do not understand the questions and do not seek clarification they might answer without knowing what exactly the questions means. This would introduce bias.
- Situational biases from different levels of trust and rapport with participants could occur.
- Respondents might feel uncomfortable about the anonymity of their responses (Cresswell, 1998; Gall, Borg, & Gall, 1996; Jackson, 1995; Leedy, 1996; Sekaran, 1992).

3.10 Data Collection, Confidentiality, Security and Non-disclosure Arrangements

The investigator informed all participants of the way confidentiality and non-disclosure would be maintained. Each participant was advised prior to the interview the way the interview would be conducted. Conditions of accepting to be interviewed included advice that all information provided would be kept confidential.

During the course of the interview, participants did not need to answer any questions they wished. They could stop the interview at any point or could refuse to answer any question if they wished not to answer. Their identity or their organisation's would not be disclosed to other parties. All information provided would be treated confidentially. For the purpose of the research, an alphabetical proxy only would identify each organisation. This would also be the case in any summary report generated post thesis.

For the survey research respondents were advised that the information they provided would be kept confidential. Also the data they provided would be coded in a way that neither they nor their organisation could be identified.

All data collected will be stored in a locked filing cabinet at Victoria University, with access limited to the researcher and his supervisor.

3.11 Survey Method

Survey research is a widely used research technique (Bordens & Abbott, 1999; de Vaus, 2002b; Gall et al., 1996; Newsted, Huff, & Munro, 1998; Sekaran, 1992;

Weisberg, Krosnick, & Bowen, 1989; Zikmund, 2003). A survey method allows the collection of descriptive and or confirmatory data from a wide sample frame in an efficient manner for a relatively low cost.

3.12 Sample Frame Survey Questionnaire

A cluster sample was undertaken involving 484 government-funded non-government organisations that interact with government in Government-to-business arrangement. A cluster sample comprises of “groups that, ideally, have heterogeneity among the members within each group chosen for study.” (Sekaran, 1992). A cluster sample is appropriate when a “population consists of clusters whose cluster characteristics are similar yet whose unit characteristics are as heterogenous as possible” (Leedy, 1996).

The sample frame was based on those non-government organisations listed in the Department of Human Services (DHS) Service Agreement and Management System (SAMS) as of December 2002 (Department of Human Services, 2002b). These non-government organisations have a business relationship with DHS. Preliminary information suggested that these organisations had implemented a varied range of electronic commerce technology to support their business operations.

This interaction between a government Department (DHS) and the non-government organisations it deals with was considered representative and similar to all electronic interactions between non-government organisations and governments. Similar services are delivered across Australia, while the use and implementation of electronic commerce is also similar. Therefore the proposed study although within Victoria, was considered representative of the other Australian states.

The Department of Human Services (Department of Human Services, 2002a) interacts with over 3000 non-government agencies, this formal interaction is through electronic output reporting and may be annually, half-yearly, quarterly or monthly.

For this research organisations that interact formally on a quarterly or less basis were selected, as they were more likely to have some form of electronic commerce implemented or were likely to substantially benefit from an electronic commerce implementation. There were 484 organisations that interact quarterly or more frequently with the Department of Human Services. These organisations are listed in Appendix A.

3.13 Constructing the Questionnaire

Where available and relevant the items for the questionnaire were drawn from previous research, as identified in Chapter 2 (Literature Review) and further confirmed during the semi-structured interviews (described in Chapter 4). Additional items were also created as a result of the semi-structured interviews.

A number of steps were followed in the questionnaire design process. These were:

- Determining the required information to be sought.
- Determining the interview method and length of questionnaire. A number of methods were considered mail, personally administered, telephone and Internet.

Personally administered questionnaires were rejected for this phase because the costs and time necessary to visit each organisation was impractical as the sample

is large and the organisations are widely geographically spread throughout Victoria.

Telephone administered questionnaires were rejected for this phase because of the time necessary to arrange and then conduct telephone interviews with this large sample was impractical. In addition, the cost of long distance phone charges would have been quite large.

Internet administered questionnaires were rejected for this phase for two basic reasons. First to set up the questionnaire at a special and secured web site would have been costly. Secondly the email address of participants in the sample was not readily available. This therefore made this option impractical.

Postal questionnaire was chosen as the organisations were widely spread geographically throughout Victoria, and the investigator had address details of each organisation. The cost of administration of a postal questionnaire is relatively inexpensive. Also the anonymity of respondents is maintained when they provide data. This was considered to be important in ensuring respondents participate in the research.

- A draft Questionnaire was prepared. A number of features were considered in the preparation of the draft. Question content, question wording, the desired format for responses and the structure and layout of the questionnaire.

In designing the structure and layout of the questionnaire consideration was given to avoid introducing the many order bias. Order bias according to Frazer and Lawley (2000:29) “.... is a bias due to responses being in a consistent order where respondents answers are influenced by the order of the response categories.”

The questionnaire was designed with general questions at the beginning, and gradually becoming more specific with questions about demographics and the respondent appearing last.

Attention was given to the design and layout to ensure it was attractive and clear and therefore would motivate the respondent to complete the questionnaire.

The questionnaire was pre-tested with colleagues and then potential respondents. The questionnaire was then revised in line with feedback obtained.

A number of strategies were adopted to assess the reliability and validity of the questionnaire. A literature review and semi-structured interviews were completed before drafting the questionnaire. Feedback from pre-testing was used to refine questions. Multiple indicators of constructs were used.

de Vaus (2002b) confirms “.... where the indicator lacks reliability and validity there is measurement error..... A reliable measure is one where the same result is obtained on repeated occasions.... A valid measure is one that measures what it is intended to measure.” Therefore, particular consideration was given to ensuring the design of the questionnaire maximized both its reliability and validity.

During the design of the survey instrument care was taken to ensure where possible multi-item indicators were developed instead of single-item indicators to measure key concepts (Newsted et al., 1998). Also careful consideration was given to the wording of questions. "The best way to create reliable indicators is to use multiple-item indicators: they are more reliable and have easier methods of assessing their reliability." While "other methods of improving reliability involve careful wording." according to de Vaus (2002b). There are a number of possible reasons a question may be unreliable these include bad wording, or a person may understand the question differently on different occasions." (de Vaus, 2002b).

Content validity of all items was carefully assessed. Particular attention was given to new items. First, a colleague with skills in measurement and questionnaire design reviewed the items. Second, the initial questionnaires were pilot tested by three Chief Information Officers (CIOs). Each was contacted for an interview to seek their opinions on the questionnaire and identify any items they felt were ambiguous or confusing. Random probing was undertaken to test the respondents understanding of items, as this enabled a check of content validity (Newsted et al., 1998).

After carefully analysing the responses, a number of minor changes were made to the questionnaire, such as revising the instructions and rephrasing some questions.

The questionnaire was designed around two types of scales to measure the key concepts. Both a number of single question scales and summated (multiple question) scales were designed to measure the electronic commerce, enablers and barriers these

concepts. A scale is made up of answers to a number of questions. "The scores for each question are added together to provide each person with an overall score for that set of questions (scale score). This scale score is taken to indicate a person's position on an abstract dimension which the individual questions are intended to tap." (de Vaus, 2002b).

de Vaus (2002b), notes that "...it is desirable to measure a concept by using multiple indicators rather than one. It helps to get at the complexity of the concept.... Also multiple indicators assist in developing more valid measures." Further "multiple indicators increase reliability ... the way a question is worded can affect the way a question is answered... relying on only one question could largely be a function of the wording of the question." Also "multiple indicators enable greater precision. A single question does not allow differentiation between people with much precision." Finally " ... summarizing the information conveyed by a number of questions into the one variable the analysis is simplified considerably."

The summated scales for this research were developed by a process outlined by de Vaus (2002b), consisting of three main stages. Initially a rough scale was constructed, the best items were then selected and then a final scale was created. In creating the rough scale, five steps were followed. First, the concept the scale was designed to measure was identified. A set of questions was then developed that appeared to measure the relevant concept. The draft questions were then given to a number of people to answer. Each person's response was scored. Each person's response was added up to obtain a scale score. "The final step was producing a Likert-type scale by

creating a new variable that contained a summated scale score.” The scale was created by adding together the scores of each of the items selected.

During the first phase of the data analysis a number of statistical tests to confirm the reliability of the scales were conducted. The items selected to measure the concept were subjected to calculating the item-to-scale correlation coefficient. The best items were selected for each scale. Some items were dropped from the scales. After selecting the items for the scale, reliability was tested by calculating item - item correlations or the Cronbach's alpha coefficient.

de Vaus (2002b) proposes the way to select the best items to make up a scale is to " work out whether the responses on a particular item reflect the responses on other items is to calculate a correlation coefficient between response on the item with their responses on the set of items that make up the rest of the scale. Correlation coefficients range between 0 and 1. The coefficient that tests the fit between item and the rest of the scale is called the item-to-scale coefficient. The higher it is the more clearly an item belongs to the scale. As a rule of thumb, if it is less than 0.3 then the item is dropped from the scale." A widely accepted approach to determining the reliability of a scale is “to look at the consistency of a person's response on an item compared to each other scale item.” (known as item - item correlations). This provides a measure of the overall reliability of the scale. “The index of this is given by a statistic Cronbach's alpha coefficient. This ranges between 0 and 1. The higher the figure the more reliable the scale. As a rule of thumb alpha should be at least 0.7 before the scale can be considered reliable.... The size of alpha is affected by the

reliability of individual items. To increase the alpha of the scale and therefore the scale's reliability drop all unreliable items." (de Vaus, 2002b).

The data collected by the questionnaire were based on ordinal measures. Ordinal measures are "measures which involve some kind of ranking but no basis for measuring the amount of difference between the ranks. In other words, ...bigger or smaller, higher or lower but does not say by how much." (Rose & Sullivan, 1996).

Also ordinal measures cannot be subjected to the same rigorous statistical techniques as some other measures such as interval or ratio measures (Rose & Sullivan, 1996). Therefore, the analysis of data collected from the survey was analysed with appropriate but relatively unsophisticated statistical techniques compared to what would have been possible with interval or ratio data.

In designing the questionnaire consideration was given to collecting a scaled answer to a question as well as ensuring that each question allowed a respondent to indicate a "Do not know" response to any question.

According to de Vaus (2002b) in relation to the Don't Knows category in a questionnaire "It is generally recommended that respondents should be offered 'non-substantive' responses such as 'no opinion', don't know', or 'can't choose' when being asked attitude questions." Although a problem during data analysis is how to handle these responses "If the item on which the non-substantive response is given is to form part of a scale then treat the response as missing data and compute a scale score for

the case but exclude the variable from the computation of the scale score.” This approach was adopted during the questionnaires’ data analysis phase.

All data collected from questionnaire responses were analysed using the Microsoft Windows Version of Statistical Packages for Social Sciences (SPSS) Version 11.5. This package was chosen because according to Rose and Sullivan (1996) SPSS” is the most widely used software package among academic sociologists” it was developed in the United States by social scientists, is easy to use and widely available. There are also many publications on its use.

3.14 Administering the Postal Questionnaire

Surveys are a widely used research technique (Bordens & Abbott, 1999; de Vaus, 2002b; Gall et al., 1996; Newsted et al., 1998; Sekaran, 1992; Weisberg et al., 1989; Zikmund, 2003). In this phase, each respondent completed a postal questionnaire.

A postal questionnaire was chosen as the sample size was large (484 organisations) and these organisations were widely dispersed across many hundreds of kilometres of metropolitan and rural Victoria. Time and budget constraints also meant that other interview methods were less suitable. The sample frame was developed from the Victorian Department of Human Services register of non-government organisations it funds for 2003. The 484 organisations were a subset of 3113 non-government organisations. These 484 organisations interact electronically with this Government Department on a quarterly or more frequent basis. This sample frame eliminated approximately 2629 non-government organisations that do not interact electronically with a government Department on a reasonably regular basis. This was necessary as the goal of this research was to determine the factors that influence the level of

adoption of electronic commerce at these organisations needed for interactions with Government. A reasonably regular basis to interact electronically with government for this study was defined as 3 monthly or more frequently.

A multi-item instrument using a Likert-type scale was developed, based on information found in the literature (Phase One) and data from the face-to-face semi-structured interviews (Phase Two). This instrument was piloted and revised before it was more widely used in the survey. The post-pilot and revised survey instrument was sent to 484 non-government organisations listed in the Department of Human Services (DHS) Service Agreement and Management System (SAMS) (Department of Human Services, 2002b).

The questionnaire was sent to the following types of non-government organisations

- Primary Health
- Mental Health
- Disease, Prevention Control Surveillance
- Disability Services
- Coordinated and Home Care
- Community Services
- Aged Care
- Acute Health

Data from this phase was used in the subsequent data analysis phase.

3.15 The final questionnaire

The final questionnaire comprised fourteen pages divided into six main sections. The questionnaire commenced with description of the study, instructions about completing the questionnaire and some filter questions determining whether the organisation used electronic commerce and what form of electronic commerce was used. The six sections followed.

Section A sought views about the factors driving the implementation of electronic commerce with government in these organisations or in other words why are these organisations implementing electronic commerce. Respondents were presented with 11 drivers of electronic commerce from the literature and the semi-structured interviews. Respondents were asked to indicate their view by circling a number from one to seven. This indicated their level of agreement with each statement. Possible responses range from “Strongly Disagree” represented by “1”, “Neither Agree or Disagree” represented by “4” to “Strongly Agree” represented by “7”. The final response column “Don’t know” was represented by “x”.

Section B focused on the key factors that enable (or the factors that make possible or assist) electronic commerce and also sought views on the importance of each factor. Respondents were presented with 29 enablers of electronic commerce from the literature and the semi-structured interviews. Respondents were asked to indicate their view by circling a number from one to seven. This indicated their level of agreement with each statement. Possible responses ranged from “Strongly Disagree” represented by “1”, “Neither Agree or Disagree” represented by “4” to “Strongly Agree” represented by “7”. The final response column “Don’t know” was represented by “x”.

Section B1 focused on the key factors that enable (or the factors that make possible or assist) electronic commerce and sought views on the importance of each of 26 factors. Respondents were presented with possible responses that ranged from “Not at all Important” represented by “1”, “Moderately Important” represented by 4 to “Extremely Important” represented by “7”. The final response column “Don’t know” was represented by “x”.

Section C examined the factors that are barriers (or the factors that block or make difficult) to the implementation of electronic commerce. Respondents were presented with 27 barriers of electronic commerce from the literature and the semi-structured interviews. Respondents were asked to indicate their view by circling a number from one to seven. This indicated their level of agreement with each statement. Possible responses range from “Strongly Disagree” represented by “1”, “Neither Agree or Disagree” represented by “4” to “Strongly Agree” represented by “7”. The final response column “Don’t know” was represented by “x”.

Section C1 focused on the key factors that are barriers (or the factors that make block or make difficult) electronic commerce and sought views on the importance of each of 24 factors. Respondents were presented with possible responses ranging from “Not at all Important” represented by “1”, “Moderately Important” represented by 4 to “Extremely Important” represented by “7”. The final response column “Don’t know” was represented by “x”.

Section C2 requested the respondent to identify from a table of 18 factors the single major issue facing their organisation when implementing electronic commerce. An open category of “other, please specify” was included. This allowed respondents to include any major factor that had not been reflected in the table.

Section D gathered information about the organisation. Initial questions sought details about the area where the organisation was located and also the area the organisation predominantly delivered its services. Respondents were given the choice of either Metropolitan Melbourne or regional/Rural Victoria for both questions. Information was then sought on the value of organisations assets and revenue, number of employees, number of full-time equivalents, number of IT staff, approximate organisational budget, approximate IT budget, number of computers, per cent of computers with internet access, and the three main services the organisation provided. For this question respondents chose from a list of 10 health and community services with an open category of “Other please specify”. This last category allowed a respondent to identify any major service they provided that was not identified in the list.

Section E sought details about the respondent. Each was asked to indicate their job title from a list of 9 possibilities. An open category “other – please specify” was also included in the list. This allowed respondents to specify their job role if it was not reflected in the list. Further information about the number of years they worked for the organisation, their number of years working with information systems and their highest level of completed education was also sought.

Finally, Section F allowed the respondent to add any additional comments and to indicate whether they would like a summary copy of the studies findings. Table 3.1 below summaries the sections of the questionnaire.

Table 3.1 Questionnaire Section Design

Questionnaire Section	Data Sought
Introduction	Research Overview Instructions to complete questionnaire Filter Questions
A	Drivers of electronic commerce
B	Factors that Enable electronic commerce
B1	The importance of each factor
C	Factors that are a Barrier to the implementation of electronic commerce
C1	The importance of each Barrier
C2	Key Implementation issues
D	Organisational details
E	Respondent details
F	Express personal comments Copy of results

3.16 Limitations of the Postal Questionnaire

Careful consideration was given to the limitations of postal questionnaires. These are:

- The investigator is unable to clarify questions for respondent if they arise.
- Questionnaires often have a relatively low response rate.
- Non-response bias

3.17 Information Confidentiality

All respondents to the questionnaire were assured that all information they provided would be kept completely confidential. They were further advised that their name or organisations name would never be placed on the questionnaire. These undertakings were made to ensure maximum participation and honest and frank answers to all the questions on the questionnaire.

Furthermore, each respondent was advised, “You can be certain that no-one will ever know how you responded to the questions. The survey results will be published in a summarised only form.”

3.18 Questionnaire and Accompanying Letters

The postal questionnaire was sent to 484 non-government organisations. Each survey was addressed to the Chief Executive Officer (CEO) at each organisation. Instructions suggested that if the CEO was not the most appropriate person to complete the questionnaire then it should be passed to the most appropriate person in the organisation, presumably the Chief Information Officer or their equivalent. It was expected that the CEO would pass the questionnaire to the Chief Information Officer (CIO).

3.18.1 Covering Letter

The covering letter described the purpose of the research, importance of the study, and the importance of each organisation’s participation in the study. Each letter also included the investigators details for answering any questions and also the supervisors and Ethics Committee’s details for answering any queries about the study.

A pre-paid self-addressed envelop for the return of the survey was included with each questionnaire.

The questionnaire was sent on 28 August 2003 by Victoria University mail service. A copy of the covering letter can be found in Appendix B.

3.18.2 Reminder Letter

A reminder letter was sent to only those who had not responded by the 22 September 2003. The letters were sent to the same addressees of the initial survey. The reminder letter re-emphasised the importance of the study and the importance of their response. It requested the recipient to complete and return the survey promptly or contact the investigator for a copy of the survey if it had been misplaced. A copy of the reminder letter is presented in Appendix C. It was possible to send reminder letters to only those who had not responded as the initial surveys were accompanied by a return envelope that contained a unique number on it. As response was received the number was noted. This allowed identification of responses not received. Survey respondents were advised with the survey that their responses would be treated confidentially and that neither their organisations nor themselves would be identified in the research. Envelopes and surveys were separated on receipt this ensured confidentiality was maintained.

3.19 Questionnaire Response

The following responses (Table 3.2) were received by late September 2003 after the initial mail-out of questionnaires:

Table 3.2 Questionnaire Response Rate after the initial mail-out

Number of Responses	Type of Response	Per cent of Sample
1	Returned undelivered	0.2 %
123	Completed Questionnaires	25.7 %
n = 484		

After a reminder letter was sent 24 September 2003 and an additional 38 responses were received (see Table 3.3 below).

Table 3.3 Questionnaire Response Rate after first Reminder Letter

Number of Responses	Type of Response	Per cent of Sample
3	Returned undelivered	0.6 %
38	Complete Questionnaires	7.56 %
n = 484		

A total of 161 responses or a response rate of 33.26% was received. A response rate totalling over 20% is considered sufficient for a valid analysis (Yu & Cooper, 1983). However a series of statistical tests were conducted for non-response bias by comparing item responses of early questionnaire responses with later questionnaire responses. All data analysis is presented in Chapter six. The overall summary of Questionnaire response is reflected in Table 3.4 below:

Table 3.4 Total Questionnaire Responses Rate

Number of Responses	Type of Response	Per cent of Sample
4	Returned undelivered	0.8 %
161	Complete Questionnaires	33.26 %
n = 484		

3.20 Postal Questionnaire Survey

This Section presents an overview of the method of completing the questionnaire. The participants were asked to indicate their views on the questionnaire by circling numbers on Likert type scales.

For Sections A, B and C respondents indicated their view by circling a number from one to seven. This indicated their level of agreement with each statement. Possible responses range from “Strongly Disagree” represented by “1”, “Neither Agree or Disagree” represented by “4” to “Strongly Agree” represented by “7”.

While in Sections B1 and C1 participants were asked to indicate their view by circling a number from one to seven, indicating the level of importance of each factor as either an enabler or barrier to the implementation of electronic commerce for non-government to government electronic commerce. Possible responses ranged from “Not at all Important” Represented by “1”, “Moderately Important” by 4 to “Extremely Important” represented by “7”. Each scale also included a 8th. category “Don’t Know” represented by “x”.

The answers were presented on Likert Type scales similar to the examples in Figure 3.2 and Figure 3.3 while Table 3.5 presents a summary of the main scales and their rating used for key questions.

Figure 3.2 Scale example for key questions

Strongly Disagree		Neutral				Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

Figure 3.3 Scale example for the questions seeking an importance rating

Not at all Important			Moderately Important			Extremely Important	Don't Know
1	2	3	4	5	6	7	X

Table 3.5 Summary of scales and their rating indicators

Indicator	Concept measuring scale	Importance rating scale
7	Strongly Agree	or Extremely Important
6		
5		
4	Neither Agree or Disagree	or Moderately Important
3		
2		
1	Strongly Disagree	or Not at all Important
X	Don't Know	Don't Know

The numbers represented relationships indicating 7 was better than 6, 6 was better than 5, 5 was better than 4, 4 was better than 3, 3 was better than 2, 2 was better than 1.

In the course of the survey analysis statistical techniques particularly frequency tables and rank ordering of data were employed. These were the most appropriate techniques for analysing the ordinal data collected by the questionnaires. The survey analysis is found in Chapter 5.

The findings of the postal questionnaire analysis presented in Chapter 5 and the semi-structure interviews described in Chapter 4 were combined to describe a final set of factors that drive, enable or block the implementation of electronic commerce between non-government organisations and government, which are presented in Chapter 6.

3.21 Conclusion

This chapter described the multiple research techniques both qualitative and quantitative in nature used to systematically and thoroughly collect and analyse the necessary data to meet the research aims. The analysis of the data will allow the formation of knowledge about the driver's, enablers and barriers for the implementation of electronic commerce between non-government organisations and the government. The findings from the analysis of the data will inform the central questions of this research described in Section 1.9 and Section 3.2.

The next Chapter presents details of the face-to-face semi-structured interviews that were conducted with 6 non-government organisation.

CHAPTER FOUR SEMI-STRUCTURED INTERVIEWS

4.1 Introduction

This chapter presents the findings of six semi-structured interviews with non-government not-for-profit organisations in the health and community services sector. Each organisation uses various forms of electronic commerce. The interviews explored the enablers, barriers and drivers of electronic commerce in each organisation.

This phase of the research explored further electronic commerce issues identified in the literature as presented in Table 2.1 in Chapter 2 and compares these issues with those confronting non-government organisations.

The findings from this phase of the research were also used in the development of the instrument used in the postal survey (Chapter 5), the subsequent phase of this research.

This chapter is organised in the following manner: Section 4.2 provides an overview of the face-to-face interview process. The following six sections provide details of the data collected during the face-to-face interviews and of other written material collected at the time of the interviews. Section 4.3 presents data collected from Organisation A, Section 4.4 Organisation B, Section 4.5 Organisation C, Section 4.6 Organisation D, Section 4.7 Organisation E, Section and 4.8 Organisation F. After the individual analysis of each organisation, Section 4.9 presents an overall analysis of the semi-structured interviews. Section 4.10 provides a conclusion to the chapter.

Finally, Section 4.11 contains overall summary tables of key issues and implementation factors raised during the course of the interviews.

4.2 Overview of the Face to Face Interview Process

The interviews were conducted with the Chief Information Officer (CIO) or Information Technology Managers of these organisations. The organisations were based in either metropolitan Melbourne or rural Victoria. Some of the metropolitan Melbourne based organisations also provided services throughout Victoria. Both interview participants and their organisations are not identified for reasons of confidentiality.

Participants were initially contacted by phone seeking their participation in this study. A standard request script was used to request each interviewee to participate in this study. The script explained the purpose of the research, its potential significance, the researchers' relationship with the university and how confidentiality would be maintained. The interviewee was also advised that a written agreement to participate in the study was required before commencing the interview. On agreement to participate, an interview time was established and a request was made for the Interviewee's email address. One week before each interview, an email was sent to each participant. The email reconfirmed the interview location, date and time, explained the nature of the research, and included the details about the way confidentiality would be maintained. An interview guide and a University "Consent" Form were included. The consent form was required before commencing the interview. In addition, the participant was given the option to have the form picked up by the researcher on the day of the interview before the interview commenced.

Interviews were approximately one hour in duration. The interview guide is presented in Appendix D

Other details about the organisation were also collected at the interview. These included annual reports, if available, and the organisations web site address and other available publications about the organisation.

A summary of the findings of this study was offered to each Interviewee. They were advised it would be some time before the study was completed and published.

Each interview covered:

- Organisational profile
- General level of electronic commerce use at the organisation
- Key drivers for the adoption of electronic commerce
- Identification of key enablers of electronic commerce
- Identification of major barriers to the use of electronic commerce
- Key issues
- Future use of electronic commerce

A summary of the participating non-government organisations including the types of services they provide and the interviewee is shown in Table 4.1.

Table 4.1 Organisation Summary

Organisation	Services	Interviewee
Organisation A	Disability Services, Coordinated and Home Care, Aged Care, and Disease Prevention Control Surveillance	Manager Information and Technical Services
Organisation B	Primary Health, Mental Health, Disability Services, and Coordinated and Home Care.	Manager Information Services
Organisation C	Coordinated and Home Care, Primary Health, Mental Health, Disability Services, Aged Care and Drug and Alcohol Services	Manager Information Systems
Organisation D (Rural based)	Acute Health Services and Primary Health, Mental Health, Disability Services, Aged Care, Coordinated and Home Care	Manager Information Technology
Organisation E (Rural based)	Acute Health Services and Primary Health, Mental Health, Disability Services, Aged Care, Coordinated and Home Care	Chief Information Officer
Organisation F	Acute Health Services and Primary Health, Mental Health, Disability Services, Aged Care, Coordinated and Home Care	Chief Information Officer

The next Sections commencing with Section 4.3 present data from the organisations participating in the face-to-face semi-structured interviews.

4.3 Organisation A

4.3.1 Organisation Profile

Organisation A is a large local government organisation that offers a full range of local government services including some health and community services.

The health and community services provided by this agency are; disability services, coordinated and home care, aged care, and disease prevention control surveillance. The State Government funds a relatively small amount of these services.

The organisation's budget is approximately \$200 million, and it employs approximately 1,000 (full-time equivalent) staff.

The Information Technology function has a specific fixed amount of funding allocated annually. This is approximately four percent of the organisation's budget. There are additional funds allocated for approved IT projects. There are 40 IT staff and approximately 950 computers, all with Internet access.

The organisation does not have an electronic commerce manager; the Manager Information and Technical Services perform the role. This position is the most senior IT position in the organisation.

4.3.2 Electronic Commerce at Organisation A

This organisation uses electronic commerce to support a range of its operational functions. It uses an intranet within the organisation, a web site and Internet technology to provide transactional capabilities. The transactional capabilities range

from relatively basic use, such as being able to lodge a general enquiry about local government services to applying for various permits that are issued by the agency. Other use includes the ability to apply for jobs with the organisation. Those wishing to respond to a tender may also lodge their response on-line. The more sophisticated use of technology at the agency supports financial transactions where residents may pay their rates on-line or if one was unfortunate enough to receive a parking fine, then this may also be paid on-line.

The organisation has limited electronic commerce interactions with government organisations. These interactions are mainly by email and file transfers between the organisation and the government Departments. While discussing with interviewee A electronic commerce with government, some disappointment was expressed by the interviewee about the varying levels of enthusiasm government departments displayed when attempting to resolve technology issues between the organisations. Currently they are working with Land Victoria in obtaining access to geographical data “.... although you could describe the relationship as alternating between on and off” suggested the interviewee. “This makes implementation slower, costly and more difficult than it needs to be.” This suggests the importance of effective working relationships between business partners, particularly when implementing new technology.

The level of electronic interaction between this local government organisation and the Department of Human Services is relatively low and predominantly by email.

The organisation also has electronic interactions with other organisations, financial transactions with banks and on-line purchasing with suppliers. There is also support of the building planning and approval process by electronic commerce based systems.

4.3.3 Drivers at Organisation A

The adoption of electronic commerce between this organisation and government departments is driven by two key reasons. The first, “making the organisation more open and accessible to business and the community.” The second and equally important reason according to Interviewee A is “to make us more efficient”. Although information after the implementation of electronic commerce related systems about any increased levels of organisation efficiency is not available.

4.3.4 Barriers at Organisation A

A number of barriers hinder the uptake of electronic commerce between this organisation and Government Departments. A major barrier is the costs associated with establishing and operating electronic commerce. There are additional information technology costs for software, hardware and other information technology infrastructure. Also new skills are required for staff involved in the acquisition and development of the electronic commerce infrastructure.

An interesting comment from the interviewee revealed, “electronic commerce is creating a new channel, it is an add-on channel, not much efficiency, but add-on costs.” The “new channel” refers to an additional way customers can contact and transact business with the organisation in a new and additional manner not previously possible. The “add-on costs” refers to the impact on the Information Technology recurrent budget. The Information Technology budget, funds labour,

telecommunications, hardware and software maintenance, but has remained relatively the same for many years. With the implementation of electronic commerce, additional labour and skills are necessary to both establish and operate this new environment, and according to Interviewee A there has been no supplementation to their budget.

Within the organisation, there is also a perception that electronic commerce “costs too much.” This view has formed because of a perceived lack of payback from some earlier investment in this new technology as “the new electronic channel” builds slowly. This also means that the benefits are building slowly. Therefore if the new channel is to handle a proportion of customer enquiry’s for example, it may take some time for people to accept obtaining service in this manner. Also marketing this new means of service may be slow or a proportion of the customer base may not have Internet access. According to the interviewee, the organisation “needs to be aware that a channel builds-up slow, and needs to be aware that you are investing in the future.”

While the literature (see Chapter 2) suggests that security is often a major issue for organisations considering the implementation of electronic commerce, this organisations’ view is that “security is an issue, but not insurmountable. The necessary infrastructure to support the current electronic commerce requirements is in place and satisfactory.” However, it has been relatively expensive to implement.

While concern about information privacy when conducting electronic commerce is also often cited in the literature, this organisation confirmed that this was not a barrier. The interviewee suggested, “All areas are aligned with a common and established

practice. Whatever needed to be treated as sensitive to privacy before the legislation has remained. Therefore there has been no real change.” in work practices.

In summary for organisation A the key barriers are:

- the costs associated with establishing and operating electronic commerce,
- developing new skills for staff,
- the perceived lack of payback when investing in electronic commerce,
- a general lack of understanding about the timing of electronic commerce benefits realisation and finally
- security, however this was not an insurmountable barrier.

4.3.5 Enablers at Organisation A

A number of enabling factors are assisting the implementation of electronic commerce in this organisation. There is a vision of “making the organisation more open and accessible to business and the community.” This has lead senior management to support of electronic commerce initiatives. This support is “crucial in ensuring all internal departments also support these initiatives. Initial funding has been provided, although on-going funding is less than necessary.”

Initially, electronic commerce initiatives were driven by a “push factor from the IT area rather than demand (pull factor) from the business”. The literature recognises that it is more desirable for business units to be demanding technology users and it is less desirable for the IT area to have to push the business into using it. This business lead approach assumes that if benefits are to be derived from using technology then the business needs to take ownership of its implementation and use. It was suggested that in the early phases of deploying electronic commerce in this organisation that “IT was

the part of the organisation able to develop awareness of the opportunities.” The interviewee went on to declare that the initial situation is now “turning around with more pull from the business.” to implement electronic commerce technology. There is a widely held view developing that the continued investment in electronic commerce is delivering back office efficiency.

The interviewee suggested by “looking at end-to-end processes with more handled electronically – the more efficient we become.” Therefore, the integration of applications with backend systems is important.

The IT areas ability to use the available software tools to develop electronic applications at a reasonable cost was important. In addition, the interviewee believed the developing reputation of the IT area to deliver useful electronic commerce applications for the business was now fostering further confidence and willingness to use the technology.

A final major enabler was a need for consistency in the approach of implementing electronic commerce between the government and the non-government sector. According to the interviewee “reform needs to come down the line” for non government-to-government electronic commerce. For example, there appears to be a need for clearer direction from the federal and state governments in the area of security of transactions. If a local government designs a solution to protect their data in transit back to Government there is a high probability that the receiving party may not be able to read the data that is sent to them. This suggests that data exchange standards are important.

In summary the key enablers for organisation A are:

- senior management support,
- business to drive the use of electronic commerce not IT,
- need to look for electronic commerce opportunities in end to end business processes,
- reasonable cost to develop electronic commerce applications, and finally
- a consistent approach between government and non-government organisations in areas such as data exchange.

4.3.6 Electronic Commerce Issues at Organisation A

The major issue for this organisation was the “People protecting their patch problem”.

If major benefits are to be achieved from electronic interaction between these parties there needs to be a greater level of co-operation between agencies and all three levels of government according to this interviewee. Often each party is either working to a different agenda or a different set of priorities and timeframes. This makes progress relatively slow.

4.3.7 Future Electronic Commerce at Organisation A

The interviewee suggested a number of future electronic commerce scenarios. There is a need for all agencies to implement electronic transactions for all their key inter-agency interactions. In the area of planning and geo-spatial data, it is highly desirable for all agencies to operate from a single source of data produced by the government.

There is also a large opportunity for agencies to share both data and electronic content between each other. This could lead to lower costs of production and maintenance of the data.

Finally, in the health and community services area there is an “opportunity to more highly automate the data exchange requirements.” Currently a majority of requirements are handled by email.

4.4 Organisation B

4.4.1 Organisation Profile

Organisation B is a large non-government organisation that offers a range of health and community services. The services this agency provides are: primary health, mental health, disability services, and coordinated and home care. These services are offered at a number of locations throughout Victoria. The State Government funds a majority of these services.

The organisation has a budget of approximately \$30 million, with currently a \$1.25 million deficit. The agency contributes approximately \$3.6 million of their funds towards the operation. There are approximately 700 employees (including part-time and volunteers) or 550 full-time equivalent staff.

The Information technology function has a specific fixed amount of funding allocated annually. This is approximately 2.6 percent of the agencies budget. Additional funds are allocated to projects only after an approved business case. There are 4 IT staff and approximately 400 computers, all with Internet access. There are nine sites on their

wide area network with the remainder of small sites using the Internet and email to exchange data.

The organisation does not have an electronic commerce manager, the Manager Information Services performs this role.

4.4.2 Electronic Commerce at Organisation B

There is basic use of electronic commerce at this organisation. There is an internal intranet and a web site with general information about services the agency provides. The public may also donate to the organisation through its web site. The organisation's marketing department controls the web site, there are also web links to other community and health related services.

The organisation has limited electronic commerce interactions with Victorian and Federal government organisations. These interactions are mainly by email and occasional computer file transfers between organisation B and government Departments.

The level of electronic interaction between the organisation and the Department of Human Services is relatively low and predominantly by email, it is the main electronic commerce interaction between organisation B and the government.

The organisation has limited electronic interactions with other non-government organisations.

4.4.3 Drivers at Organisation B

There are three key reasons driving the adoption of electronic commerce between organisation B and government departments. The agency is continually looking for ways to improve efficiency and to be able to deliver more services within their limited budget. There is also a drive from within the organisation to implement broadband Internet services, as they appear to be cheaper than traditional telecommunication carrier services. Finally, a number of government tenders for the funded delivery of community-based services by non-government organisations require the electronic lodgement of reporting data by the service provider during the course of the contracted service. This means that organisations successful in winning the provision of a service require an Internet-based computing infrastructure to enable it to meet government requirements.

4.4.4 Barriers at Organisation B

The interviewee identified a number of barriers that have hindered the uptake of electronic commerce between Organisation B and Government Departments.

The implementation of Privacy laws by Government Departments has been a major barrier, as there is “no coherent policy about transmission of documents and different groups within parts of Departments say different things”. Interviewee B went on to explain there has been advice that documents should not be sent electronically “but can fax it through”. The interviewee could not understand the inferred subtle difference between electronic and fax transmissions when it comes to privacy. “Both means of transmission are electronic and documents can be intercepted and viewed. Therefore, the privacy and security concerns should be similar.”

There are additional costs associated with establishing and operating the basic electronic commerce environment the organisation has established. Funding for additional technology costs is extremely tight; this makes supporting any implementation of electronic commerce difficult. To gain support for any new investment often requires an initial “proof of concept” trial. These trials assist in determining the potential costs and benefits of any new technology investment. However, it is quite difficult to get funding allocated for these trials.

Overall, staff computer literacy levels are generally low and there are extremely limited funds to invest in technology training. This makes implementing new technology difficult. A further complication is that even when training is available there is reluctance in each business unit to release staff from their already busy work schedules to participate in training.

There is further management concern that systems that are electronic commerce based require a longer timeframe for implementation and therefore there is a longer time before the organisation will realise any benefits.

Technology barriers are also highlighted. There is a concern about the cost and availability of appropriate Internet enabling infrastructure. Both initial capital costs for the necessary hardware, that is firewalls, web servers and communications equipment, are large. In addition, additional software is required. Therefore, a combination of once-off project funding and then an increase in the overall technology recurrent budget is required. Further investment is also needed to ensure

regional sites have adequate communications infrastructure. Telecommunications tariffs are more expensive in regional areas than in metropolitan areas. The interviewee also noted that there is no “consistent quality of service” for those using electronic commerce, as data communications performance is difficult to monitor. In addition, if there are technical problems then the Internet service providers do not always restore services quickly.

A final major barrier is the fact that the government is unable to ensure that all government departments use the same data encryption technology to secure data when being transmitted across the Internet. This means that each non-government organisation requires different software and different technical skills depending on the department it deals with. This leads to confusion and higher establishment and on-going costs for this organisation.

In summary the key barriers to the implementation of electronic commerce in organisation B are:

- the inconsistent implementation of business and technology standards by government,
- limited funding to support the establishment and operation of Internet based infrastructure,
- low computer literacy skills of staff,
- telecommunications tariffs, and
- the perceived long implementation time and therefore longer time before benefits can be realised after investing in electronic commerce.

4.4.5 Enablers at Organisation B

The organisation is being assisted in the implementation of electronic commerce by a number of enabling factors. Senior management support is a key factor. As all projects require a justifiable business case and senior management support for approval.

Internet services and telecommunication costs need to be reasonable for this organisation to use this technology more widely. The interviewee suggested that there should be some form of financial discounts offered to organisations in the health and community sector using this new technology. Additional available staff to support electronic commerce implementations and ensuring existing staff have the right level of skills in this new technology also allows faster and smoother implementation. The organisation's investment in appropriate electronic commerce infrastructure was also essential.

There is an opportunity to offset other operational costs in the organisation as they invest in this new technology, revise work processes and benefits are realised. When this is recognised there will be a greater drive to implement electronic commerce.

According to the Interviewee, consistency in government departments' technology policy for electronic commerce with non-government organisations is necessary. Policy particularly in the area of data exchange and its associated security is key.

In summary the key enablers in this organisation are:

- senior management support,

- justifiable business cases,
- reasonable Internet service provider and telecommunication costs,
- additional skilled staff to support implementations,
- re-skilling of existing staff,
- appropriate infrastructure and finally
- an established track record of successful implementations.

4.4.6 Issues at Organisation B

A major issue proposed by the interviewee is a view that if government departments demand non-government organisations to interact with them and to do so by electronic commerce, then the government should pay for this or subsidise the necessary equipment, software and staff training required by the non-government organisation.

4.4.7 Future Electronic Commerce at Organisation B

In the future, there will be a need for all agencies to implement electronic transactions for their key inter-agency interactions.

There is also an opportunity for non-government organisations to share data between each other. This could lead to better service planning. There was a further opportunity to share data with both state and local government and for the organisations to work in closer collaboration.

4.5 Organisation C

4.5.1 Organisation Profile

Organisation C is a large non-government organisation that offers a range of community and health services nationally. It has offices in each state of Australia and delivers a range of services depending on the local need and available funds.

The services it provides are: coordinated and home care, primary health, mental health, disability services, aged care and drug and alcohol services. The State Government funds approximately 75% of these services. The organisation has a budget of approximately \$200 million.

There are approximately 4000 employees. However, these are spread across a Southern Territory that incorporates Victoria, South Australia, Western Australia, Northern Territory and Tasmania.

The Information technology function has a specific fixed amount of funding allocated annually for Information technology infrastructure. This is approximately 1% of the agencies budget. Additional funds are allocated to new projects if approved. There are 16 IT staff at the central location with an IT administrator at each site, and approximately 3000 computers. Approximately 45% of all computers have Internet access.

The organisation does not have an electronic commerce manager, the role was provided by the Manager Information Systems.

4.5.2 Electronic Commerce at Organisation C

Organisation C uses electronic commerce to support a wide range of its operational functions. It has invested a reasonable amount of funds in developing its web site and a substantial internal intranet. It uses Internet technology to support some business activities and provide a transaction processing capability. These transactions range from relatively basic use; such as being able to obtain details about publications the organisation produces. Through to a more sophisticated ability to support financial transactions. The public are able to donate to the organisation by the Internet or to shop, order and pay for merchandise the organisation sells. Within the organisation, the staff are able to also perform desk banking and other financial transactions by the Internet.

The organisation has a low level of electronic commerce interactions with government organisations. The nature of this interaction is mainly by email or file transfers between the organisation and government Departments. There is a regular need to obtain information from government departments often around obtaining tender documents. The level of electronic interaction between this organisation and the Department of Human Services is relatively low and mainly by email. The organisation also has very little electronic interactions with other organisations.

4.5.3 Drivers at Organisation C

There are many key drivers of electronic commerce between organisation C and government departments. There is a need for improved efficiency in all areas of this organisations operation. Government also requires an increasing amount of electronic reporting from the organisations it funds. The implementation of electronic commerce

is also seen as a way of facilitating a move from reactive to more proactive management by enabling the more timely availability of data. In addition, by using electronic commerce it will allow the better exchange of information for service planning between this organisation, government and other health organisations.

4.5.4 Barriers at Organisation C

There are only a few barriers to the adoption of electronic commerce. Organisational factors particularly around obtaining “user buy-in” to both invest and then implement the technology have been challenging according to the interviewee. The second area concerns training. In this organisation, training staff in technology is difficult both in funding the training and releasing staff to participate. In addition, many new skills are necessary to establish and operate new technology environments.

The other major barriers are around the technology both in having the funds to acquire and then operate it. The security of data in transmission between parties is also a major barrier that is hindering potential use. The concern is that “what we send is what they get” according to the interviewee, there is a perception that data could be tampered with while in transmission. This means that there needs to be a greater level of confidence in many aspects of the use of electronic commerce. The encryption of data in transmission across the Internet is essential. In addition, the implementation of an appropriate level of security infrastructure within the organisation is extremely important.

There is also concern about information privacy when conducting electronic commerce activities with Government Departments. There are high risks when

transmitting information as it could be intercepted or altered before the other party receives it. Unless this issue is overcome then there is likely to be resistance.

In summary the key barriers for organisation C are;

- organisational “buy-in” to both invest and implement electronic commerce,
- staff training both technical and non technical staff,
- funds to acquire and operate electronic commerce infrastructure,
- and finally the security and privacy of data particularly while in transit across the internet.

4.5.5 Enablers at Organisation C

The interviewee proposed a number of factors that have assisted the implementation of electronic commerce in this organisation. The most important factor has been organisational commitment. There needs to be a compelling business case clearly identifying both costs and benefits that are attributable to any new investment in technology. The organisation needs to be convinced there are tangible benefits before supporting the implementation of electronic commerce. In addition, senior management support is an important ingredient. The likelihood of a successful implementation diminishes without this support according to Interviewee C.

When electronically interacting with Government it is essential to ensure a clear understanding of both parties' requirements. The full cooperation of government is necessary if there is to be a successful implementation.

Sufficient funds are another key enabler. Substantial amounts of funds need to be invested in hardware, software and skilled staff to implement and operate this new

environment. Financial support from the Government is a necessary factor as this organisation has limited funds and new investments in technology is always difficult.

Finally, the interviewee notes that a tighter integration between the organisations current systems and the electronic commerce systems developed to meet government requirements is crucial. With better system integration, mandated government reporting will be a by-product of the organisations business operation and therefore the organisation will realise tangible benefits from their investment in electronic commerce. As currently, data has to be re-keyed into additional systems to meet the data collection requirements of government.

In summary, the key enablers are;

- organisational commitment,
- justifiable business cases,
- cooperation between trading partners (i.e.) non-government organisations and government,
- sufficient funds, skilled staff, and finally,
- system integration between organisational backend and government systems.

4.5.6 Issues at Organisation C

A key issue identified by interviewee C was security when conducting electronic commerce. There is a strong requirement to keep client details and their information secure. There is a general view within the organisation that transacting sensitive material by electronic commerce is insecure. Security needs substantial improvement, but this would require a substantial amount of funds.

Complying with the privacy legislation introduces some additional issues particularly when it comes to the exchange of client data. “At each site we will need a person responsible for privacy,” suggested the interviewee, this requires either additional training or additional staff. Either requires additional funding.

4.5.7 Future Electronic Commerce at Organisation C

The use of electronic commerce at this organisation will continue to increase as justifiable projects are identified. Tighter integration of backend systems with emerging electronic commerce systems is necessary, to avoid major additional costs. By integrating browser based user interfaces onto older legacy systems provides an easier to use interface without substantial applications development expense.

The electronic exchange of data between organisations within the health and community services sector is also expected to increase. The sharing of data across the sector will lead to better service planning and better-targeted service delivery.

Finally, there is an expectation that the increased use of electronic commerce will eventually lead to lower operational costs for the agency however, this will only occur over time.

4.6 Organisation D

4.6.1 Organisation Profile

Organisation D is a medium sized non-government organisation that offers a range of health services in a rural area. This organisation's provides predominantly acute health services and Primary Health, Mental Health, Disability Services, Aged Care,

Coordinated and Home Care. The State Government and Federal Government fund 100% of these services. The organisation has a budget of approximately \$150 million. There are approximately 2,700 employees or 1,700 full-time equivalents.

The Information technology function has a specific fixed amount of funding allocated annually for Information technology operations. This is approximately 0.3% of the agencies budget. The IT budget excludes capital replacement, which is funded by each of the agencies business units. Additional funds are also allocated to the budget from new approved projects. There are 10 IT staff comprising of four part-time and six full-time, supporting approximately 500 computers. Approximately 80% of these computers have Internet access.

The organisation did not have an electronic commerce manager, the role was performed by the Manager Information Technology.

4.6.2 Electronic Commerce at Organisation D

This organisation's use of electronic commerce is centred mainly on its web site. The site also provides a financial transaction processing capability. Therefore, the web site has a high security capability. When the public connects to the site to make a payment, the data in transmission during the transaction is protected by security technology (Secure Sockets Layer, 128 bit) data encryption. Payments between this organisation and others are also protected in this way. The organisation also has an intranet that is heavily used and supports easier access to organisational information. The information on the web site is mainly health related information for the public.

This organisation has limited electronic commerce interactions with federal and state government departments. These interactions are mainly by email and file transfers between the organisation and these Departments. The level on electronic interaction between this organisation and the Department of Human Services is at a “reasonable level” both on-line access and email is used. The organisation provides reporting data about the number and type of health related services it provides. These regular electronic reports are required as part of the governments funding of these services.

The organisation has a low level of electronic interactions with other organisations; the interaction that does occur is mainly for access to electronic journals and other research material. An example is access to MIMS on-line for medical staff. MIMS provides details of drugs, their actions and contra-indications.

4.6.3 Drivers at Organisation D

Electronic commerce between this organisation and government departments is being driven by a number of factors. The first is the demand of its trading partners. For example, as part of the conditions of obtaining government funding for many of the main medical and health services requires the organisation to regularly report back electronically to government. This means the organisation has needed to establish and maintain a minimum implementation of electronic commerce technology. The second and equally important reason is this organisation has some services outsourced and connections for data exchange are by the electronic commerce infrastructure. Cost savings and a need to improve the organisations operational efficiency is also driving the adoption of this technology. In addition, there are demands from professional staff, doctors, radiologists and nurses working for this organisation to have greater

access to the Internet for research purposes. Management is generally supportive of increased Internet access if sufficient funds are available.

However, the establishment and operation of electronic commerce in this organisation is not without its issues.

4.6.4 Barriers at Organisation D

A number of factors hinder the adoption of electronic commerce between this organisation and Government. A major barrier is the costs associated with establishing and operating electronic commerce. The interviewee noted that “.... a lot of the organisation’s hardware needs updating”, and the organisation “.... has very limited finances, with priorities in other areas of the organisation’s operation”. If capital funds could be found to upgrade the hardware then there also needs to be an increase in the recurrent budget to pay for ongoing expenses such as hardware and software maintenance. The staff also require new skills to enable the development and deployment of the electronic commerce infrastructure.

The organisation needs to strengthen security measures as they implement electronic commerce; this is expensive and requires some new IT skills.

An interesting comment from the interviewee concluded, “Privacy is the same as security, a barrier to transferring information” An explanation for this centres around the large costs associated with the exchange, use and sharing of information. According to interviewee D, security and privacy are major barriers to effectively operating outside the organisation with electronic commerce.

While the literature suggests that security is often a major issue for organisations considering the implementation of electronic commerce, this organisations' view is that security is an issue, for both protecting the organisation from outside attacks (perimeter security) and for the security of data when in transit between organisations.

Concerns about information privacy when conducting electronic commerce is often cited in the literature as an issue and interviewee D also confirmed that this was also a challenge for this agency.

A further barrier is the number and diversity of data collection requirements of both federal and state governments. Backend systems cannot always generate the required data and multiple datasets are required. This means either data is double-handled or is especially generated to meet requirements. Especially generating the data to meet requirements is usually labour intensive and therefore expensive.

A final major barrier that effects this rural organisation is poor technology infrastructure. While the main campus is located in a major rural town, other hospitals and healthcare groups that are part of this organisation are located in smaller country towns. These hospitals have extremely limited funds in their budgets for any technology. Extremely poor local telecommunications infrastructure, limited Internet service providers and very expensive telecommunications bandwidth if compared with the pricing of equivalent services in the metropolitan area further compound this.

In summary the key electronic commerce barriers for organisation D are;

- the costs associated with establishing and operating electronic commerce,

- the training of existing staff in new skills,
- investments needed to meet security requirements,
- investments needed to meet privacy requirements,
- the diverse data collection requirements of government,
- backend system integration with data collection systems,
- the generally poor technology infrastructure of rural organisations,
- poor local telecommunication infrastructure in rural areas,
- limited Internet Service Provider's, and
- the relatively high cost of telecommunications bandwidth.

4.6.5 Enablers at Organisation D

The interviewee highlighted a number of enabling factors that assisted the implementation of electronic commerce in this organisation. Additional funds specifically for electronic commerce initiatives are essential.

A better understanding of privacy and security techniques to protect both the use and transportation of data between organisations enables a greater use of electronic commerce and is important.

More data communications bandwidth to all groups within the organisation regardless of their location is also a fundamental requirement to enable greater use of electronic commerce applications.

Greater senior management direction and support of electronic commerce initiatives is also necessary. This support is crucial for ensuring all internal groups also support electronic commerce initiatives.

Finally, government demands to use electronic commerce need to be more consistently planned and implemented. According to interviewee D, all too often there are many demands to provide data in many different ways or many times to the same organisation. This creates many unnecessary overheads. Also without better systems and technology planning the ability to share more data across the sector is limited.

In summary the key enablers for this organisation are;

- more funds particularly to support electronic commerce type initiatives,
- a good understanding of privacy and security and how to apply this in an electronic commerce setting,
- more data communications bandwidth at affordable prices,
- senior management support for electronic commerce initiatives, and finally,
- better systems and technology planning and coordination by government of their requirements of non-government organisations.

4.6.6 Issues at Organisation D

The interviewee identified a number of major issues; the most important was the integration of the organisations back-end system with emerging electronic commerce requirements of government. Without integration, there are additional overheads and inefficiencies for the agency. The second issue was data collection fragmentation, that is, a number of requests from government to organisations in the health sector appear

to be uncoordinated, this often leads to a duplication of effort for the organisations required to produce the data for the requesting government department.

The final issue according to the interviewee is whether an electronic commerce initiative “is business led or IT driven”. Electronic commerce projects are “not an IT project but an organisational project”. This point has not been fully grasped by this organisation. Therefore, there is reluctance by the business units to support or see the opportunities to use electronic commerce. This is slowly changing.

4.6.7 Future Electronic Commerce at Organisation D

A number of future electronic commerce scenarios between this organisation and government should be expected.

There is a need for government to carefully understand the impact of requests for electronic based information from organisations before it makes requests. Often the overheads in generating the required data are large. From an agency’s perspective, there is often no perceived value to the organisation in providing required data to government. It would be different if the data were automatically generated as a by-product of the organisation’s operation.

There should be some form of rationalisation of the current number of required datasets. There often appears to be overlaps and duplication in the requirements of government.

There is also an opportunity for agencies to share both data and electronic content between agencies if the issues of security and privacy could be overcome suggested interviewee D.

Other opportunities are better electronic commerce interfaces into existing systems. New applications, such as e-prescribing (electronic prescribing) with integration between hospitals and parts of the pharmaceutical supply chain would also improve operational efficiencies and potentially reduce costs.

Finally, there is a large opportunity to make many work processes more efficient by the use of electronic commerce.

4.7 Organisation E

4.7.1 Organisation Profile

Organisation E is a large sized Health Alliance comprising of a number of non-government organisations that offer a range of health services in a rural area. This organisation provides Acute Health, Primary Health, Mental Health, Disability Services, Aged Care, Coordinated and Home Care services. The Alliance is spread over a wide geographic area of hundreds of kilometres in rural Victoria. There are nine organisations in the Alliance. The State and Federal Government fund 100% of these services, apart from patients privately insured. The organisation has a budget of approximately \$300 million, or \$340 million if primary care partnerships are included.

There are approximately 5,000 employees or 2,500 full-time equivalents.

The Health Alliance's Information technology function has an operational budget of approximately \$500,000. This specific fixed amount of funding is allocated annually for Information technology operations. The IT budget excludes IT capital replacement which is funded separately by the agencies that makeup the Alliance. Organisations in the Alliance also have separate operating budgets for their own IT operations. Additional funds are also allocated for new projects if approved. There are four IT staff in the Office of the CIO Alliance and approximately another 20 staff in the organisations in the Alliance. These IT staff support approximately 2000 computers. Approximately 90% of these have Internet access.

The Chief Information Officer performs the role of electronic commerce manager in this organisation.

4.7.2 Electronic Commerce at Organisation E

This organisation uses a range of electronic commerce and related technologies to support its operations. The web site for the Alliance is basic with not a lot of content, however it was in the process of being substantially enhanced. There were links off to other organisations in the Alliance. The amount of content at each of these sites also varied. A virtual private network was used to secure transactions travelling over the Internet. An example was the dedicated web connections used to support access to the payroll system that was hosted in New Zealand.

Files are transferred between organisations in the Alliance over the Internet using secure file transfer protocol, more commonly referred to as secure FTP. For access to sensitive reports on the web server, users need to authenticate themselves.

One rural hospital that annually completes 455 obstetric procedures has implemented a web-based on-line booking system for clients and medical practitioners. The pathology and radiology areas send results to local general practitioners by secure email via Healthlink. Surprisingly fax is also extensively used to communicate with general practitioners. The reason for this is the low penetration of technology in many general practices. In addition, in a number of general practices where a PC is available it is often located at the front desk with the receptionist and not with the practitioner in their consulting suite.

The Alliances intranet has been an important enabler of greater access to information, as the organisations in the Alliance are scattered across a large rural region. The intranet is a closed technology that allows web-based access to information that is not available to the public.

The information on the web site is mainly health-related information for the public.

This Alliance has electronic commerce interactions with federal, state government departments and local government. These include the Federal Youth and Family Services and Social Security. Interaction with local government is necessary because sometimes the local government has a Federal government contract to deliver health services. These services then need to be provided in conjunction with the health alliance. These interactions are mainly by email and file transfers between the organisations. The level of electronic interaction between this organisation and the Department of Human Services is reasonable. Both on-line access and email is used. However, it was noted that the performance was poor with some web-based systems

the Department provides and therefore the Alliance prefers not to use these systems but alternatives. The Alliance provides to the Department reporting data about the number and type of health services it delivers. Regular electronic reports are often a requirement of the government when it funds organisations to provide health or community services.

The Alliance has a reasonable level of electronic interactions with other organisations. These include purchasing on-line. There is on-line access to supply catalogues therefore employees order and pay for their requisitions on-line. Although there is auto generation of the purchase orders these still need to be faxed to the supplier. This was necessary because often signatures were still required on the purchase order and this was not easily possible using electronic commerce, according to the interviewee. There is access to research via the Department of Human Services, Clinicians Health Channel or Universities associated with the health sector.

4.7.3 Drivers at Organisation E

The key drivers of electronic commerce for the Health Alliance are focused around improving organisational efficiency, improving work processes, the perceived benefits of using the technology, and external pressures such as Government direction, according to the interviewee. As broadband communications technology becomes increasingly available in the rural areas, new computer applications that can be accessed from any Alliance organisation become possible. For example, recently at a large hospital a film-less radiology application was implemented. It is now being considered for implementation into smaller agencies, specialists and general practitioners in the Alliance. This would enable faster availability of radiology, which is important if the patient has a serious complaint. The application has a large central

database at one hospital but can be accessed using web technology by a number of other locations in this rural region.

The bigger health organisations in the Alliance “.... are not driven as much about costs but more about better clinical care and reducing risks of error.” suggested Interviewee E. There is an emerging expectation that health data is available everywhere. That is, each organisation and primary health practitioner in the Alliance has access to hospital systems.

Economies of scale are important in this rural area. Small organisations in the Health Alliance do not have the funds or resources to invest in technology. Therefore the implementation of shared technology services is important, Internet-based technologies are making this possible more so now than in the past. Broadband telecommunications is an essential element according to the interviewee.

There is increasing support for investment in technology as “the organisation now values data because it leads to information”. With the intranet and virtual private network, more information is available throughout the organisation than ever before.

Finally, there are many external pressures driving the Alliance to implement electronic commerce, most notable being Government direction. A majority of the service delivery reporting to Government needs to be in an electronic form. Therefore, organisations need to ensure at least a basic electronic commerce capability to comply with this requirement.

4.7.4 Barriers at Organisation E

The major barriers to the adoption of electronic commerce between this organisation and Government are focused around only a few factors. There are two key organisational factors, according to the interviewee. People issues: the smaller organisations in the Alliance need the right people with the right skills to enable a faster implementation of the technology. While the smaller organisations deliver a fair range of competent services, many do not have staff enthusiastic and keen to use the new technology. According to the interviewee, “they need to take ownership of the use of the new technology”. In addition, a greater investment is needed in staff training and education around the benefits of using this type of technology.

In the larger organisations of the Alliance, management support for the use of electronic commerce could be strengthened. Leadership from the Chief Executive Officers and the organisations’ other Executives are a barrier if they do not support electronic commerce.

The other factors are technology and environmental based. The implementation of new technology requires additional funds. Budgets are extremely tight and developing compelling business cases is a challenge. As the benefits from using and adopting the technology becomes more widely accepted this is expected to change. Investments are not only necessary in equipment and software but also in staff skills to both implement and operate the new environments.

The business and technology environment the rural Alliance operates within is also a barrier in comparison to their Metropolitan counterparts, suggests the Interviewee.

The implementation of new relatively cheap communications technology that will allow business to connect at a reasonable cost to use Electronic Commerce is more pervasive in areas closer to capital cities like Melbourne than for their Rural counterparts.

Digital Service Line (DSL) or broadband coverage in the region is to about 60% of the Alliances organisations. Coverage is not as good as the Metropolitan areas. In addition, there is very little competition in the rural area for telecommunication carriers therefore there is not the discounting in price that occurs in the Metropolitan areas. Combine this with a substantially tighter budget position compared to the Metropolitan Health Services and this makes the implementation of Electronic Commerce more challenging.

The Alliance also needs to strengthen security measures as they implement electronic commerce.

In summary the key barriers for organisation E are:

- having sufficient staff with the necessary skills to implement and support electronic commerce at each appropriate location in the organisation.
- enthusiastic staff to use new technology and sufficient funds to train those that require it.
- organisational leadership to drive and support electronic commerce implementation.

- justifiable business cases to support investments in electronic commerce. reasonable and affordable telecommunication services throughout the rural area and finally,
- the implementation of sufficient security to enable electronic commerce.

4.7.5 Enablers at Organisation E

A number of enabling factors that have assisted the implementation of electronic commerce in this Alliance were identified. Most of the enablers are organisational in nature. Leadership is a key enabler and fundamental to success. It is needed to drive projects and support the allocation of the right resources to ensure success of electronic commerce. Across the Alliance, the level of leadership varies from passive to active support.

Recruiting the right middle and senior managers that understand the value of information is a major enabler according to the Interviewee. This is also linked to leadership, because without a good understanding of the value of information, new investments in technology and systems that enable better information is limited.

The right skill sets in the organisation is also of major importance. Of particular importance are technical skills in all aspects of electronic commerce, and business analysts' skills. The analysts' skills allow the identification of opportunities for the business to use electronic commerce to improve and support their business processes.

Change management, socialising ideas before implementing change is an important factor. Often the business areas have a reluctance to change from the ways that they have always worked. New ways of doing things to get the same or better results in a

faster time is often viewed with scepticism. For example taking bookings for medical services over the Internet is different from someone ringing up and making an appointment. This new service channel may be of value to patients and may eventually save costs and improve some internal processes.

Time according to the interviewee is also a key enabler often once support for a new electronic commerce initiative is given, results and benefits are expected quickly. However, this often is not the case because the adoption of the new technology takes time before it is widely adopted and integrated into standard business practices.

Benefits realisation and funding allocation and approval for electronic commerce at Hospitals is a key enabler. There needs to be a recognised link between investments in technology and better hospital outcomes. This link is not always obvious. For example, some hospitals invest in a film-less radiology system expecting overall better hospital outcomes, while others may give a higher priority to diagnostic equipment and put a film-less radiology system as a lower priority on their investment program.

The appropriate electronic commerce infrastructure within the organisation is essential, particularly security infrastructure.

Finally, in the rural areas communications bandwidth at the right price is fundamental for the adoption and growth of electronic commerce, both within organisations and between organisations.

In summary the key enablers for this organisation are:

- consistent senior management leadership,
- management understanding the value of information,
- staff with the appropriate skills to implement and operate electronic commerce,
- effective organisational change management when implementing,
- acknowledged benefits realisation post implementation,
- appropriate technology infrastructure including security and finally,
- affordable broad bandwidth to all the organisations locations.

4.7.6 Issues at Organisation E

A number of issues that effect electronic commerce between the Alliance and government Departments were identified. The cost of developing new electronic commerce applications is a major issue when there is a limited budget and often higher priority investments are new hospital equipment.

Usually the Alliance needs to generate special collections of data to meet government reporting requirements, this is expensive and does not benefit the organisations operation in any way.

The cost of integrating back-end Alliance systems with electronic commerce requirements of government Departments is problematic. To reduce administrative burdens on the Alliance it is desirable to generate government reporting requirements from existing systems rather than double handle data. However to modify existing

systems is often non-trivial and expensive and does not warrant the investment. This is a major dilemma.

Finally, the electronic commerce between this Alliance and government is widely considered “one-way traffic” going only to the government. There is nothing returned to the Organisation and therefore it has extremely limited value to this organisation. A dated review of some years ago by one major hospital in the Alliance estimated that data collections to meet Government requirements cost it approximately \$800,000 per annum.

4.7.7 Future Electronic Commerce at Organisation E

This organisation expects a future electronic commerce scenario between it and the government would remove unnecessary manual clerical reporting activities that require it to duplicate effort to meet data collection requirements. This is likely to be achieved through better integration of applications used by the organisation and better designed service reporting mechanism required by government.

Government should also rationalise the current number of data collections it requires from organisations. For example in dealing with one government Department this organisation generates 10 similar but different output reports. Often there is a lot of similarity, duplication and overlap. Sharing of both data and electronic content between organisations in the health sector is a key opportunity to improve service outcomes and service planning.

Finally, there is an opportunity to improve, reshape, and therefore achieve better service outcomes by the use of electronic commerce in a range of service processes.

4.8 Organisation F

4.8.1 Organisation Profile

Organisation F is a large sized non-government organisation that offers a range of health services in the metropolitan Melbourne area. This organisation provides Acute Health Services and Primary Health, Mental Health, Disability Services, Aged Care, hospital in the home, Coordinated and Home Care and community health centres. The organisation covers the largest geographical area of any health service in Melbourne. The State Government and Federal Government fund 100% of these services, except for private patient revenue and some public donations. The organisation has a budget of approximately \$300 million

There are approximately 5,500 employees or 3,700 full-time equivalents.

The Information technology function has a specific fixed amount of funding allocated annually for Information technology operations. This is approximately 0.9% of the organisations budget. The IT budget excludes capital replacement that is funded by each business unit. The organisation allocates annually, approximately \$1.6 million in capital for infrastructure, however all types of infrastructure including medical equipment compete for these funds. A business case must be presented for any additional funds for new projects. There is an extremely limited pool of funds for these types of bids. There are 20 IT staff supporting approximately 1200 computers. Approximately 90% of these have Internet access.

The organisation did not have an electronic commerce manager. The role was performed by the Chief Information Officer.

4.8.2 Electronic Commerce at Organisation F

This organisation's use of electronic commerce is varied. The web site provides important services. Fund raising activities are posted on the web site; also, forms for donating to the hospital are available through the site. These forms, however still need to be printed-off and then posted with the donation to the hospital. The most popular page, the one that receives the most surfing hits, is the "jobs page". All jobs from casual cleaners to nurses and other specialist medical staff are advertised on the web-site. The interviewee described this as 'ecommerce for recruitment'. The site also provides both directly and with links, a lot of health-related information for the public. The external facing web site is managed by the Public Affairs Department of the organisation. The organisation's intranet is becoming increasingly important. It is enabling new application delivery models for the organisation. For example, radiology and pathology results are available to medical staff throughout the organisation on the intranet. This means that staff at any of the 32 physical sites of the organisation can readily obtain results in a consistent and timely manner. The Department of Human Services, Clinicians Health Channel was further mentioned as an extremely useful site that has a high degree of relevant health information for medical staff. The Clinicians Health Channel is a closed web site operated by the Government that has been designed for specific use by medical practitioners. The site requires a user-id and password for access. It is available to all medical staff throughout Victoria.

A virtual private network or VPN is being established for hospital to GP electronic interactions. These types of closed networks are extremely secure as they provide an encryption service for all data tunnelling through them. This ensures all data is protected in transport across the Internet.

This organisation has electronic commerce interactions with federal and state government departments. These are mainly by email and electronic file transfers between the organisation and the government Departments. The level of electronic interaction between this organisation and the Department of Human Services is at a “reasonable level” with both on-line access and email. There are many data collections about the number and type of services the organisation provides that are required by government. These regular electronic reports include such information as: treatment episodes, waiting list information and Admissions Information Management system (or AIMS) data. There are also interactions with the Health Insurance Commission in relation to electronic billing and private health funds.

The organisation also has a low level of electronic interactions with other organisations. When discussing the issuing of patient discharge notices between the hospital and the local referring GP, it was surprising to learn that Fax is the preferred method of electronic communication. The interviewee suggested that while many GPs had a computer, it was often located in the front office with the receptionist and used for patient contact details or billing. Often, the GP still worked from paper patient records and therefore a fax was easier and preferred to an electronic record as a fax would be as accessible to the doctor when seeing the patient. Although electronic mail is used, it is not considered secure for all types of business use.

4.8.3 Drivers at Organisation F

Electronic commerce between this organisation and government departments is driven by what might be described as demands of its trading partners. Electronic interaction with government departments is mandated as part of accepting the funding for service delivery. There is little perceived value to the organisation from these interactions. Never the less this also means the organisation needs to establish and maintain a minimum implementation of electronic commerce technology. Other important drivers are; expected cost savings and a need to improve the organisations operational efficiency.

The investments to establish and maintain the web site has been driven by its ability to assist raising revenue, by facilitating public donations to the hospital. It has also been important in saving recruitment advertising costs. As interviewee F suggested “.... with 5,500 staff there is a reasonable rate of turnover. Therefore, there is a large on-going recruitment overhead, anything that can help reduce these costs is extremely important to this organisation.” There are also demands from doctors, radiologists, nurses and other professional staff, to have greater access to the Internet for research purposes

Finally, interviewee F concluded “.... funds are an inhibitor not a driver of electronic commerce. Without funds you cannot do it”.

4.8.4 Barriers at Organisation F

There are a number of factors that hinder the adoption of electronic commerce between this organisation and Government. A major barrier is the availability of funds

to invest in establishing and operating electronic commerce. As the interviewee suggested “.... there are not only the costs associated with the initial infrastructure, there are also large costs to provide sufficient technology redundancy to ensure continued business operation if major problems occur. There will be more importance given to electronic commerce over time, because we will be making greater use of it.”

The level of the technical skills of the staff also impedes the development and deployment of the electronic commerce infrastructure. To contract in additionally skilled staff is expensive and often not possible due to budget constraints.

Security is an issue that needs to be worked through. Security needs to be appropriate to the level of business risk associated with the electronic commerce application being used. Until recently, the existing systems have been available on a relatively closed network basis and only available to some staff at their own locations. Many of the applications are local area network based. Therefore, the potential types of security issues that emerge when applications are made available across the organisation of the intranet or outside the organisation for medical practitioners are new and have a different risk profile associated with their access.

Information privacy when conducting electronic commerce is also a relatively new issue and requires a similar risk assessment as security. Privacy risks need to be worked through and allocated an appropriate level of business risk. There are long established practices around the privacy of paper records such as patient records. There are less established practices around electronic commerce.

A further barrier is the large costs associated with integrating legacy applications with new systems. Without integration, there is substantial double handling of data, and this is often manually intensive. Without integration, there is large resistance from the business to adopt and implement new electronic commerce applications that do not have a direct benefit for the business unit. Often a lot of the non-government to government electronic interactions are considered of no benefit to the business unit producing the data.

The interviewee also suggested that “.... In Health even with a good business case that does not necessarily get the dollars needed to implement a project. There are often many important competing investments for very limited discretionary funds.”

In summary the key barriers for this organisation are;

- the costs associated with establishing and operating electronic commerce,
- the training and development of new skills for staff,
- electronic commerce security requirements,
- electronic commerce privacy requirements,
- the diverse government data collection requirements,
- the cost of back-end system integration with new electronic commerce applications, and finally
- the perception that investments in electronic commerce will lack tangible benefits.

4.8.5 Enablers at Organisation F

There are a number of enabling factors that have assisted the implementation of electronic commerce in this organisation. Senior management support is an important factor, without this, business units may be reluctant to embrace the use of some of this new technology. Specific funds available for electronic commerce initiatives are essential, although all requests should be supported by a justifiable business case. Another important organisational enabler is staff skilled in the implementation and support of the new technology.

Interviewee F identified a number of technology enablers. Improved security techniques to protect the use and transportation of data between organisations particularly electronic email would support a greater use of electronic commerce.

Access to appropriate infrastructure was necessary. This includes both technologies inside the organisation, such as virtual private networks for staff and for general practitioners computer support access and telecommunications infrastructure outside the organisation. Reasonable Internet bandwidth tariffs are essential if all groups within the organisation regardless of their location are to use the technology more.

In addition, a key enabler is “success” according to interviewee F; once the infrastructure is in place new application opportunities become easier. As successful use of the new applications becomes widely publicised throughout the organisation, business units will invest in implementing more applications. For example, the intranet application that makes a number of diagnostic results available across the

organisation is perceived as extremely valuable, the web interface is easy to use while the cost of deployment is relatively cheap.

In summary the key enablers for organisation F are;

- senior management support justifiable business cases that secure appropriate project funding,
- staff skilled in the operation and implementation of electronic commerce,
- increased security for email and other electronic commerce applications,
- telecommunications bandwidth at affordable prices, and finally
- a recognised history of success in implementing electronic commerce projects.

4.8.6 Issues at Organisation F

There are a few issues that affect the use of electronic commerce between this organisation and government. The most important issue being the perceived limited value of the electronic exchange of data with government. According to Interviewee F, “The exchange of information from non-government organisations with government is one-sided with no real value being gained by this organisation.”

In addition, in this organisation, there is a greater focus around the use and exploitation of the intranet rather than externally facing applications. A key example has been the introduction of patient diagnostic results for the appropriate medical staff on the intranet. This application has had wide acceptance and is considered a valuable productivity aid by improving timely access from any location that has intranet access. A number of other applications are being considered.

Finally, interviewee F proposed that “.... Electronic commerce was not the core business although it adds value around the edges, and this value will grow as more examples of successful implementations emerge.”

4.8.7 Future Electronic Commerce at Organisation F

Electronic commerce will enable new service models in the future. Because the web-based technology is relatively cheap and widely available, it will make new service opportunities possible. For example, a tighter integration of primary health practitioners like General Practitioners with hospital patient information, discharge information and patient treatment plans becomes easier. A further opportunity may be better use of technology and applications to support services like hospital in the home services where some types of patients could be medically monitored in their home.

There is likely to be more electronic data transfers between all types of business and service provider organisations, not just government. In addition, government may develop some information that could be returned to non-government organisations for useful activities like service planning.

This organisation believes there should be some type of rationalisation of the number of datasets government requires. Often there appears to be duplication in these requirements.

Finally, there are also opportunities for greater application integration between hospitals and parts of the pharmaceutical supply chain using electronic commerce technology.

4.9 Semi-Structured Interview Analysis

This section presents the analysis of the data collected as part of the semi-structured interview phase of this research. This data was also used with the literature review (Chapter 2) to inform the design of the questionnaire used in the subsequent phase of the research presented in the next chapter (Chapter 5). Key issues were identified using content analysis based on Table 2.1 in Chapter 2. This list of variables was further modified to reflect the data collected by the face-to-face semi-structured interviews.

This section is organised in the following manner: initially key drivers of the implementation of electronic commerce in these non-government organisations is presented, followed by key implementation issues, key barriers and concluding with key enablers for the implementation of electronic commerce in non-government organisations.

4.9.1 Key drivers of Electronic Commerce in non-government organisations

The data suggests the 9 key drivers of electronic commerce in non-government organisations identified from the semi-structured interviews were:

- (a) to improve efficiency,
- (b) Government direction or requirements to use electronic commerce for data exchange,
- (c) To create a new or complimentary service channel,
- (d) To enable work process improvement,
- (e) To reduce operational costs,

- (f) At management direction,
- (g) To allow better access to organisational data,
- (h) To allow better external access to the organisation, its information and services,
- and (i) to make these non-government organisation more open and accessible to business and the community.

4.9.2 Key Implementation Issues

The data supports the view that the nine key implementation issues identified during the interviews with these non-government organisations were:

- (a) the perceived limited cooperation between trading partners, particularly when technical problems occur.
- (b) The need for senior management direction to drive the use of electronic commerce.
- (c) Funding for electronic commerce initiatives.
- (d) Government requirements need to be a by-product of their business operations to avoid double and sometimes triple entry of data to meet government reporting requirements.
- (e) Need to improve the limited value in the exchange of data with Government, as it was highlighted that the exchange of data is one-way. Sent to the government but nothing of any value is returned to the organisation.
- (f) There are too many output reporting data collections required by Government, often the same or similar data is entered many times to meet the many requirements of Government. Non-government organisations believed that the electronic data collection requirements imposed on them are often uncoordinated and impose inefficient work practices.

(g) All Government Departments need to implement consistent technology standards in areas such as the use of the same encryption technology for electronic commerce. The consistent implementation of key technology standards is essential if the wasting of limited funds in non-government organisations is to be avoided.

(h) The support and operation of electronic commerce within a wide geographically spread organisation particularly those organisation that have many sites throughout metropolitan and rural areas.

(i) Electronic commerce initiatives need to be business led, rather than IT department led.

4.9.3 Barriers to the Implementation of Electronic Commerce

The data supports the view that the key 12 barriers to the implementation of electronic commerce identified during the interviews with these non-government organisations were:

(a) The costs associated with establishing and operating of electronic commerce.

(b) Investment payback is long term. This therefore dampens support to invest in electronic commerce initiatives.

(c) Electronic commerce security, particularly the security of data while in transit across the Internet.

(d) Privacy concerns particularly relating to information while in transit across the Internet.

(e) The acquisition, development or upgrading of the existing technology base to enable electronic commerce. In addition, the costs associated with establishing and operating electronic commerce were considered high.

(f) Electronic commerce infrastructure availability, particularly for telecommunication services throughout the rural areas.

- (g) Low levels of computer literacy, which hindered the rate of implementation.
- (h) Staff training particularly staff having the necessary skills to implement and support electronic commerce.
- (i) Ensuring staff buy-in to using electronic commerce.
- (j) The lack of integration of new electronic commerce systems with existing backend systems.
- (k) Lack of senior management support, as without support investments in all the necessary technology infrastructure would be extremely difficult.
- (l) Telecommunication costs as these were considered high and would retard investment in electronic commerce.

4.9.4 Enablers for the Implementation of Electronic Commerce

The data supports the view that the 14 key enablers of electronic commerce identified during of the interviews with these non-government organisations were:

- (a) Senior management support this is required to ensure business units seriously consider the use and potential benefits of using electronic commerce.
- (b) A justifiable business case for the implementation of electronic commerce. Interviewees suggested that often it is difficult to justify any organisational investment in electronic commerce infrastructure.
- (c) Telecom tariffs and the cost of using Internet service providers (ISP). If the costs were lower then more electronic commerce based applications would be developed and implemented.
- (d) Skilled staff in the implementation and use of electronic commerce technology. Most of these non-government organisations had limited staff with the necessary new skills to support any electronic commerce implementations.
- (e) Sufficient funds to implement electronic commerce initiatives.

- (f) Available electronic commerce technology.
- (g) Appropriate infrastructure for electronic commerce for example there are potentially major security risk exposures without the appropriate infrastructure.
- (h) An organisational plan or vision identifying electronic commerce as part of a key enabler to the future operation of the organisation.
- (i) Initially, the Information Technology (IT) function leading the business in the use of electronic commerce technology until they understood its value and picked-up driving its use.
- (j) Technology substitution for other organisational costs. That is, the substitution of technology to alter and improve existing organisational cost structures.
- (k) Full cooperation between trading partners, particularly Government departments.
- (l) Effective organisational change management to enable electronic commerce.
- (m) Recognised benefits realisation after the implementation of electronic commerce.
- (n) Recognised electronic commerce implementation success. This post event recognition was critical for future projects.

In summary, the key factors identified from the data collected from the semi-structured interviews with the six non-government organisations were many and varied. A large proportion aligned with factors identified in the literature review (Chapter 2), however the data exposed some additional factors. In each category, the factors can be divided into one of three categories. They may be related to organisational factors, technology factors or business environment factors.

4.10 Conclusion

Overall, non-government organisations identified nine drivers of electronic commerce. Government direction or requirement to use electronic commerce for data

exchange being a major factor. There were 12 key barriers factors identified with cost, security and privacy appearing to be the major factors. There were 14 key enabler factors identified with senior management support of electronic commerce and a justifiable business case to support investment in electronic commerce appearing to be major factors.

The overall findings from the semi-structured interviews appear to be consistent with the literature (Table 2.1), however some barrier and enabler factors did not have strong support.

A summary of the major findings of the semi-structured interviews is presented in the following Summary Tables in Section 4.11. The first Table 4.2 depicts the drivers of electronic commerce at each organisation, Table 4.4 shows those issues that are barriers to the use of electronic commerce, Table 4.3 reflects the enablers of electronic commerce, Table 4.5 depicts electronic commerce issues, Table 4.6 summaries future opportunities for electronic commerce at each organisation. Finally, Table 4.7 provides an overall summary of the each organisation.

The next Chapter (5) presents data from the survey questionnaire and data analysis.

4.11 Interview Summary Tables

This Section contains the following tables:

- Table 4.2 Electronic Commerce Drivers
- Table 4.3 Electronic Commerce Enablers

- Table 4.4 Electronic Commerce Barriers
- Table 4.5 Electronic Commerce Key issues
- Table 4.6 Electronic Commerce Future Opportunities
- Table 4.7 Organisation Summary

Table 4.2 Electronic Commerce Drivers

Organisation	Using EC will Reduce Costs	EC will enable work process improvement	EC will improve efficiency	Government direction or requirement to use EC	EC will be a new or complimentary service channel	Management direction To implement EC	EC will allow better access to data	EC will allow better access to the organisation	Other
Organisation A			Yes		Yes			Yes	More open and accessible to business and community
Organisation B				Yes		Yes			Management direction
Organisation C		Yes	Yes	Yes	Yes		Yes		Access to data (Planning Data)
Organisation D	Yes			Yes	Yes		Yes		Access to external data (Mims on-line) Organisational Demand (doctors, nurses)
Organisation E		Yes	Yes	Yes	Yes		Yes		
Organisation F	Yes		Yes	Yes	Yes				Organisational Demand (doctors, nurses)

Table 4.3 Electronic Commerce Enablers

Organisation	Senior Management Support of EC	Justifiable Business Case for EC	Appropriate Infrastructure for EC	Telecom tariffs or available Capacity	Skilled Staff in the implementation and use of EC Technology	Sufficient Funds to enable EC Implementation	Available EC Technology	Agreed Strategy or Plan or Vision Identifying EC	IT leading the business in the use of EC Technology	Other
Organisation A	Yes					Yes	Yes	Yes	Yes	
Organisation B	Yes	Yes		Yes	Yes					Technology Substitution For other Costs
Organisation C	Yes	Yes				Yes				Full Cooperation Between trading partner (Government)
Organisation D	Yes	Yes		Yes		Yes				Government demands
Organisation E	Yes	Yes	Yes	Yes	Yes	Yes				Effective Change management to enable EC
Organisation F	Yes	Yes		Yes	Yes					Benefits Realisation Recognised Implementation success

Table 4.4 Electronic Commerce Barriers

Organisation	Costs of EC	EC Investment Payback is long term	EC Security	Privacy	EC Technology Acquisition and Development or Upgrade	EC Technology Infrastructure Availability	Low Computer Literacy Levels	Staff Training	Government requirements to use EC	Other
Organisation A	Yes	Yes	Yes	Yes	Yes	Yes				
Organisation B		Yes		Yes			Yes	Yes	Yes	
Organisation C	Yes		Yes	Yes				Yes		Staff Buy-in to use of EC Technology
Organisation D	Yes		Yes	Yes	Yes	Yes		Yes		EC Integration with Backend Systems
Organisation E	Yes	Yes	Yes				Yes	Yes		Lack of Senior Management support
Organisation F	Yes	Yes	Yes	Yes				Yes	Yes	Telecommunication Costs EC Integration with Backend Systems

Table 4.5 Electronic Commerce Key issues

Organisation	Cooperation between Trading Partners	Need for Senior Management direction to drive the use of EC	Funding for EC	Government Requirements a by-product of business Operations	Limited value in the exchange of data with Government	Many data collections of Government	All Government Departments need to use the same Encryption Technology for EC	Other
Organisation A	Yes	Yes						
Organisation B			Yes	Yes			Yes	Geographic spread of the operation to support EC
Organisation C				Yes				Drive for Electronic commerce needs to be Business led
Organisation D			Yes	Yes		Yes		
Organisation E		Yes	Yes			Yes		
Organisation F				Yes	Yes			

Table 4.6 Electronic Commerce Future Opportunities

Organisation	Greater use of electronic commerce by trading partners	Potential to share content & data with trading partners (in the H & CS Sector) using EC Technology	Community services sector could use more EC Technology – currently mainly email	Increasing trend communicate Electronically using EC Technology	Using EC to share agency data with government to ensure better Service Planning	Using EC for Integration of Systems with Government	EC will enable New Service Models
Organisation A	Yes	Yes	Yes				
Organisation B		Yes		Yes	Yes		
Organisation C						Yes	
Organisation D		Yes		Yes	Yes	Yes	
Organisation E		Yes			Yes	Yes	
Organisation F	Yes	Yes			Yes		Yes

Table 4.7 Organisation Summary

Organisation	Approximate Organisation Budget (\$ million)	Approximate Number Of Employees	Employee Full-time Equivalent	Approximate IT Budget	IT Budget as a % of Organisational Budget	Number of IT Staff	Approximate Number of Computers	Approximate Per cent of Computers With Internet access
Organisation A	200	1100	1,000	8,000,000	4	40	950	100
Organisation B	30	700	550	780,000	2.6	4	400	100
Organisation C	200	4,000	4,000	2,000,000	1	16	3,000	45
Organisation D	150	2,700	1,700	450,000	0.3	10	500	80
Organisation E	300	5,000	2,500	500,000 ¹	0.1	24	2,000	90
Organisation F	300	5,500	3,700	2,700,000	0.9	20	1,200	90

Note: All IT budgets were annual allocations that excluded new IT projects and capital replacement funds.

¹ This budget is the CIO's office budget each hospital in the Alliance has its own IT budget that the CIO's office does not control.

CHAPTER FIVE SURVEY AND DATA ANALYSIS

5.1 Introduction

This chapter presents details of the data collected from non-government organisations in response to a survey questionnaire. The design of the questionnaire was informed by the Literature Review (Chapter 2) and the Semi-structured Interviews (Chapter 4) conducted with six non-government organisations that have implemented electronic commerce.

From the literature a number of important questions are raised that require further investigation. A number of typical drivers, major enablers and major barriers that impact on the successful implementation of electronic commerce were identified. These raise a number of key questions (Section 1.9) that required investigation as there had been no research that had examined these factors in a non-government to government setting.

This part of the research was undertaken to confirm the electronic commerce issues raised in the literature (Table 2.1, a summary table) and the semi-structured interviews presented in Section 4.11. A sample frame of 484 non-government organisations in the health and community services sector were surveyed and data was subsequently analysed.

This chapter is structured in the following manner: Section 5.2 describes the survey method used in this phase of the research. Section 5.3 provides details of the survey response rate and Section 5.4 presents the analysis of the questionnaires. Section 5.5

offers demographic data and analysis, while Section 5.6 provides overall analysis of the drivers of electronic commerce. Section 5.7 presents overall analysis of the enablers of electronic commerce and Section 5.8 the overall barriers to electronic commerce in non-government organisations. Section 5.9 identifies key implementation issues. Section 5.10 examines the overall data from a Health and Community Services sector analysis while Section 5.11 examines the data from a metropolitan area and rural regions perspective. Section 5.12 provides a summary and comparison of drivers, barriers and enablers in the Health and Community Services sector and finally Section 5.13 presents an overall chapter conclusion.

5.2 Survey Method

To measure non-government organisations' views about the factors needed for the implementation of electronic commerce between non-government organisations and Government, questions were developed for the key concepts. The questionnaire was based on a multi-item instrument using a Likert-type scale. The questionnaire comprised fourteen pages divided into six main sections. The questionnaire commenced with description of the study, instructions about completing the questionnaire and some filter questions determining whether the organisation used electronic commerce and what form of electronic commerce was used. The six sections followed.

Section A sought views about the factors driving the implementation of electronic commerce between non-government organisations and government or in other words why these organisations are implementing electronic commerce. Section B focused on the key factors that enable (or the factors that make possible or assist) electronic commerce and also sought views on the importance of each factor. Section B1

focused on the key factors that enable (or the factors that make possible or assist) electronic commerce and sought views on the importance of each of 26 factors. Section C examined the factors that are barriers (or the factors that block or make difficult) to the implementation of electronic commerce. Section C1 focused on the key factors that are barriers (or the factors that make block or make difficult) electronic commerce and sought views on the importance of each of 24 factors. Section C2 requested the respondent to identify from a table of 18 factors the single major issue facing their organisation when implementing electronic commerce. Section D gathered information about the organisation. Section E sought details about the respondent. Finally, Section F allowed the respondent to add any additional comments and to indicate whether they would like a summary copy of the studies findings. (Appendix E - Questionnaire)

From the Victorian Department of Human Services register of non-government organisations that it funds in the health and community services sector for 2003 a sample frame of 484 from 3113 non-government organisations was constructed. These organisations interact electronically with this Government Department on a quarterly or more frequent basis. This sample frame eliminated approximately 2629 non-government organisations that do not interact electronically with a government Department on a reasonably regular basis. This was necessary as the goal of this research was to determine the factors that influence the level of adoption of electronic commerce at these organisations needed for interactions with Government in the Health and Community services sector. A reasonably regular basis to interact electronically with government for this study was defined as 3 monthly or more frequently. These organisations were widely geographically spread throughout

Victoria therefore a self administered questionnaire was an appropriate means of data collection.

The postal survey was sent to the Chief Executive Officer or equivalent seeking their participation in this research. They were requested to pass the survey to the most appropriate officer in their organisation for completion. It was expected that the survey would be passed to the Chief Information Officer or their equivalent. A self-addressed reply envelope was included with each survey. A copy of the Cover Letter is presented in Appendix B and a copy of the survey may be found in Appendix E. Respondents were requested to complete and return the survey within 10 working days of receipt. A first reminder was sent 20 days after the initial survey to 364 organisations. The timing of the despatch of this reminder was left for 20 days, as there was still a reasonable flow of returns leading up until this time. A copy of the first reminder letter may be found in Appendix C.

For analysis the questions in Section 5.7 Enablers and Section 5.8 Barriers were grouped according to the underlying concept they were to measure. Statistical tests were performed to determine if the items selected were appropriate for their assigned summated scale. Statistical tests were also applied to determine the reliability of the summated scale. Overall statistical tests appropriate for ordinal data were applied during the data analysis phase (Appendix G contains all SPSS output).

Data was analysed and examined from 3 broad perspectives. An overall analysis of the data that represented the health and community services non-government organisations was initially performed. The data was then analysed from both a health

organisation and then a community services organisation perspective. Following this the data was analysed from a metropolitan area and then a rural area perspective. This approach allowed a broader and deeper investigation of the data. Health organisations such as Hospitals were likely to have different drivers, enablers and barriers in the use of electronic commerce if compared to community services based organisations. In addition, metropolitan organisations were likely to have different drivers, enablers and barrier factors if compared to their rural counterparts. Health organisations often operate 24hrs. a day, 7 days a week similar to many organisations globally that use electronic commerce. Community Services organisations often mainly operate during business hours, similar to many government and retail organisations. Metropolitan areas usually have better electronic commerce infrastructure available when compared to rural areas. There are often denser populations in metropolitan areas that make it commercially more viable for organisations to establish their operations.

5.3 Response Rate

The overall response rate was 33.4% or 161 out of 484. The initial response rate was 25.7%; this was further increased by 7.7% responses or 38 after a follow-up letter.

5.4 Data Analysis

5.4.1 Test for Reliability

The first phase of the data analysis was to confirm the reliability of the summated scales. " A reliable scale is one on which individuals obtain much the same scale score on two different occasions. An unreliable scale is the result of unreliable items.... An approach is to look at consistency of a person's response on an item compared to each other scale item (item - item correlations). This provides a measure of the overall

reliability of the scale. The index of this is given by a statistic Cronbach's alpha coefficient. This ranges between 0 and 1. The higher the figure the more reliable the scale. As a rule of thumb alpha should be at least 0.7 before the scale can be considered reliable." The size of alpha is affected by the reliability of individual items. To increase the alpha of the scale and therefore the scale's reliability drop all unreliable items." (de Vaus, 2002b).

Further, a scale's alpha is influenced by two characteristics: "the extent of covariation among the items and the number of items in the scale. Whether dropping "bad" items actually increases or slightly lowers alpha depends on just how poor the items are that will be dropped, and on the number of items in the scale." (DeVellis, 2003).

5.4.2 Selecting the best items for the summated scales

The method used to select the best items for the summated scales was to use an accepted practice of calculating an item to scale coefficient. "The way to work out whether the responses on a particular item reflect the responses on other items is to calculate a correlation coefficient between response on the item with their responses on the set of items that make up the rest of the scale. Correlation coefficients range between 0 and 1. The coefficient that tests the fit between item and the rest of the scale is called the item-to-scale coefficient. The higher it is the more clearly an item belongs to the scale. As a rule of thumb, it is less than 0.3 then the item is dropped from the scale." (de Vaus, 2002b).

The Tables below presents the Cronbach's alpha coefficient for each of the scales. Each scale also had its item-to-scale coefficient computed. Items with an item-total correlation below 0.30 were deleted.

Table 5.1. Reflects the scales that show the Enablers of electronic commerce, 5.2 presents the Barriers to electronic commerce Scales, 5.3 the scales of Importance of Enablers Scales, while Table 5.4 presents the Barriers Importance Scales.

Table 5.1 Type of Scale and Reliability Analysis for Enabler factors to the implementation of electronic commerce.

Enabler Factor	Type of Scale	Reliability coefficient Alpha
Financial Resources	single item	---
Appropriately Skilled Staff	summated	.8950
e-commerce Technology & Integration	summated	.8095
Senior Management. Leadership and support	summated	.8534
ISP Infrastructure	single item	---
Telecommunications infrastructure	single item	---
Security and Privacy when conducting e-commerce	summated	.8759
Secure email	single item	---
Government Policy and Support	summated	.8062
e-commerce Benefits	summated	.7525
e-commerce New Service Models	single item	---
n = 161		

The item-to-scale coefficient was checked for each item in each Enabler summated scale, as the coefficient was greater than 0.3 for each item it was retained in the scale. Appendix F presents the output from the statistical analysis. As Cronbach's alpha coefficient for each of the Enabler Factors scales was at least 0.7 the scales were considered reliable for further analysis. Although ISP infrastructure and

telecommunications infrastructure, which were to be combined, had a Cronbach's alpha that was substantially less than 0.7 and therefore they were separated into single item scales. Also secure email and security and privacy when conducting electronic commerce was to be combined however their Cronbach's alpha was also substantially less than 0.7 and therefore separated into single item scales.

Table 5.2 Type of Scale and Reliability Analysis for Barrier factors to the implementation of electronic commerce.

Barrier Factor	Type of Scale	Reliability coefficient Alpha
Cost and the availability of Internet infrastructure	summated	.8490
Shortage of skilled staff (market place)	summated	.7261
Insufficient appropriate EC equipment availability	summated	.7592
Lack of senior management support	summated	.7693
The perceived inadequate security of data when conducting electronic commerce	summated	.8234
The perceived lack of privacy protection of data when conducting electronic commerce	summated	.8520
The many different data collection requirements of government organisations	single item	---
e-commerce benefits are only one-way (i.e.) for Government	single item	---
Insufficient business benefits	summated	.7081
The scale of our operations geographic spread	single item	---
e-commerce investments are a lower organisational priority	single item	---
n = 161		

The item-to-scale coefficient was checked for each item in each Barrier summated scale, as the coefficient was greater than 0.3 for each item it was retained in the scale. Appendix F presents the output from the statistical analysis. As Cronbach's alpha

coefficient for each of the Barrier Factors scales was at least 0.7 the scales were considered reliable for further analysis.

Table 5.3 Type of Scale and Reliability Analysis for Enabler (Importance) factors to the implementation of electronic commerce.

Enabler Factor – Importance	Type of Scale	Reliability coefficient Alpha
Financial Resources	single item	---
Appropriately Skilled Staff	summated	.8434
e-commerce Technology and Integration	summated	.7752
Senior Management Leadership and Support	summated	.8699
ISP Infrastructure	single item	---
Telecommunications infrastructure	single item	---
Security and Privacy when conducting e-commerce	summated	.9304
Secure email	single item	---
Government Policy and Support	summated	.8075
e-commerce Benefits	summated	.7383
e-commerce New Service Models	single item	---
n = 161		

The item-to-scale coefficient was checked for each item in each Enabler (Importance) summated scale, as the coefficient was greater than 0.3 for each item it was retained in the scale. Appendix F presents the output from the statistical analysis. As Cronbach's alpha coefficient for each of the Enabler Factors Importance scales was at least 0.7 the scales were considered reliable for further analysis. Other than ISP Infrastructure and telecommunications infrastructure, which were to be combined however, their Cronbach's alpha was substantially less than 0.7 and therefore separated into single

item scales. Also Secure email and Security and Privacy when conducting electronic commerce were to be combined however their Cronbach's alpha was substantially less than 0.7 and therefore separated into single item scales.

Table 5.4 Type of Scale and Reliability Analysis for Barrier (Importance) factors to the implementation of electronic commerce.

Barrier Factor – Importance	Type of Scale	Reliability coefficient Alpha
Cost and the availability of Internet infrastructure	summated	.8034
Shortage of skilled staff (market place)	summated	.7815
Insufficient appropriate EC equipment availability	summated	.7791
Lack of senior management support	summated	.7533
The perceived inadequate security of data when conducting electronic commerce	summated	.8702
The perceived lack of privacy protection of data when conducting electronic commerce	summated	.8850
The many different data collection requirements of government organisations	single item	---
e-commerce benefits are only one-way (i.e.) for Government	single item	---
Insufficient business benefits	summated	.7703
The scale of our operations geographic spread	single item	---
e-commerce investments are a lower organisational priority	single item	---
n = 161		

The item-to-scale coefficient was checked for each item in each Barrier (Importance) summated scale, as the coefficient was greater than 0.3 for each item it was retained in the scale. Appendix F presents the output from the statistical analysis. As Cronbach's alpha coefficient for each of the Barrier Factors Importance scales was at least 0.7 the scales were considered reliable for further analysis.

5.4.3 Non Response bias

Non-response bias may create two potential issues. It may produce reduction in sample size to an unacceptable level or an overall bias. In this study the overall response was at an acceptable level (33.4%). With the response further improving from 25.7% after the first reminder letter by 7.7% to 33.4%. To determine if there was bias between the initial survey respondents and those that did not initially respond but did so after the first reminder a comparison was made between the two groups (de Vaus, 2002b). The results of the comparison of early and late responses indicate there were no significant differences. Therefore non-response bias does not appear to be a concern.

5.4.4 Statistical Tests

As the questionnaire comprised of Likert type scales with ordinal level of measurement, appropriate statistical tests were chosen for analysis. The measure of central tendency and dispersion chosen is dependent on the level of measurement of the variable that is trying to be summarised.”, concludes de Vaus, (2002b). In examining the data for a measure of central tendency the median was appropriate. The median indicates the typical responses.

To examine variation in the sample the inter-quartile range was chosen. “Variation statistics or measures of dispersion summarise how diverse the group is. The narrower the inter-quartile range the better the median represents the distribution as a whole.” (de Vaus, 2002b) While measures of central tendency provide “a snapshot of what is typical in a sample, measures of dispersion provide a snapshot of the degree of difference or variation in the sample.” (de Vaus, 2002a)

5.5 Demographic Data and Analysis

The job title of a majority of respondents was Chief Executive Officer (35%) with Executive Director (11%), Executive (3%), Co-ordinator (5), Director (9%), Chief Information Officer (2%), Manager IT (11%), and Other (24%). The average number of years that respondents had worked for their organisation was 6.2 years, with a range of 0.1 to 20 years and a standard deviation of 4.9 years. The average number of years each had worked with information systems was 9.1 years with a range of 0 to 30 years, and a standard deviation of 7.4 years. Table 5.5 below summaries by per cent the job title of respondents.

Table 5.5 Job Title of Respondents in non-government organisations by percent.

Job Title of Respondents	% of Respondents	Cumulative %
CEO	34	35
Executive Director	11	46
Executive	2	48
Co-ordinator	5	53
Director	9	62
Chief Information Officer	2	65
Manager IT	11	76
Other	24	100
Total	98	
Not answered	2	
	100	

Demographic information on the respondents showed they had substantial IT experience, on average 9 years of IT experience; however as the per cent of those with IT related job titles was relatively low (13%) it can be assumed that this experience was gained as a user of IT rather than as an IT practitioner.

A breakdown of the highest level of education of respondents shows that 2% had a Doctorate, 20% Master Degree, 24% Graduate Diploma, 27% Bachelor Degree, 14% Diploma, and 10% Certificate. Over 70% of respondents had a university degree. Table 5.6 below summaries by per cent the highest level of education of respondents.

Table 5.6 Highest Level of Education of respondents.

Highest Level of Education	% of Respondents	Cumulative %
Certificate	10	10
Diploma	14	24
Bachelor Degree	27	51
Graduate Diploma	24	75
Master Degree	20	95
Doctorate	2	97
Not Answered	3	100
n = 161		

Analysis of the data (Table 5.7 below) reveals that of the 161 responses there were 50 or 31% of health services and 111 or 69% of community services non-government organisations. On further examination of the data from another perspective 70 or 43.5% serviced metropolitan Melbourne and 87 or 54% serviced rural Victoria. Also 4 or 2.5% serviced both metropolitan Melbourne and rural Victoria.

Table 5.7 Survey response rate by organisation type and location.

	Metropolitan Melbourne Frequency	%	Rural Victoria Frequency	%	Both Frequency	%	Total Organisations	%

							Frequency	
Health Services Organisations	15	30.0	34	68.0	1	2.0	50	100
Community Services Organisations	55	49.5	53	47.8	3	2.7	111	100
Total Organisation Frequency	70		87		4		161	
n = 161								

The budget of these non-government organisations ranged from \$85,000 to \$300,000,000 with a mean of \$2,418,115 and a median \$6,500,000. The mean of employees at these organisations was 308. The mean of fulltime equivalent employees at these organisations was 199.

Table 5.8 below provides a summary of the organisation’s budget and staff levels in the non-government organisations in the sample frame.

Table 5.8 Summary of Organisation’s budget and staff levels.

	n	Inter-Quartile Range	Low	High	Median	Mean	Standard Deviation
Organisational Budget (\$)	148	\$28,425,000	\$85,000	\$300,000,000	\$6,500,000	\$2,418,115	\$44,988,850
Employees	156	359	3	4,000	120	308	525

Full-time Equivalent Employees	150	224	1	3,000	77	199	377
n = 161							

The number of computers in these organisations ranged from 1 to 1,500 with a mean of 123. With an average of 83% having Internet access. While the IT budgets of these organisations ranged from \$0 to \$10,000,000 with a mean of \$520,554.

Table 5.9 below provides a summary of Information Technology in the non-government organisations in the sample frame.

Table 5.9 Summary of IT in non-government organisations.

	n	Inter- Quartile Range	Low	High	Median	Mean	Standard Deviation
Number of IT staff	156	2.8	0	61	1.0	2.9	7.6
IT budget (\$)	139	\$442,000	\$0	\$10,000,000	\$50,000	\$520,554	1,359,135
Number of Computers	155	115	1	1,500	40	124	213
% with internet access	154	20 %	2 %	100 %	100 %	83.3 %	27.0 %
n = 161							

The main services provided by these non-government organisations are approximately 31% provided by health related service organisations and 69% provided community services organisations.

Table 5.10 Demographics: Metropolitan – Rural and Health - Community Services

Organisational Budget	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations
<i>Median</i>	\$3,800,000	\$5,550,000	\$62,756,945	\$4,600,000
<i>Mean</i>	\$26,525,149	\$18,965,858	\$6,000,000	\$20,181,507
<i>Standard Deviation</i>	\$50,857,065	\$36,846,643	\$27,176,808	\$31,673,871
<i>Low</i>	\$100,000	\$85,000	\$240,000	\$85,000
<i>High</i>	\$266,000,000	\$300,000,000	\$300,000,000	\$200,000,000
IT Budget	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations
<i>Median</i>	\$45,000	\$40,000	\$1,318,241	\$23,850
<i>Mean</i>	\$677,869	\$267,642	\$64,000	\$452,170
<i>Standard Deviation</i>	\$1,714,986	\$457,624	\$452,408	\$1,167,437
<i>Low</i>	\$1,500	\$0	\$700	\$0
<i>High</i>	\$10,000,000	2,500,000	\$7,000,000	10,000,000
Number of Employees	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations
<i>Median</i>	128	108	807	110
<i>Mean</i>	359	255	115	252
<i>Standard Deviation</i>	553	485	410	303
<i>Low</i>	5	3	12	3
<i>High</i>	3,400	4,000	4,000	1,400
Number of Full Time Equivalent's	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations

<i>Median</i>	90	80	568	82
<i>Mean</i>	224	167	80	161
<i>Standard Deviation</i>	372	360	261	217
<i>Low</i>	2	1	4	1
<i>High</i>	2,350	3,000	3,000	1,400
Number of IT Staff	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations
<i>Median</i>	1	1	21	1
<i>Mean</i>	8	4	1	5
<i>Standard Deviation</i>	22	15	7	17
<i>Low</i>	0	0	0	0
<i>High</i>	61	15	54	61
Number of Computers	Metropolitan Area	Rural Area	Health Organisations	Community Services Organisations
<i>Median</i>	47	45	291	48
<i>Mean</i>	155	97	43	113
<i>Standard Deviation</i>	239	179	146	160
<i>Low</i>	2	1	3	1
<i>High</i>	1,200	1,500	1,500	900

5.5.1 Metropolitan and Rural Organisations

Examining the data (Table 5.10 above) from a Metropolitan and Rural perspective reveals the Metropolitan organisations’ budgets ranged from \$100,000 to \$266,000,000 with a mean of \$26,525,149 median of \$3,800,000 and a standard deviation of \$50,857,149. Rural organisations budgets ranged from \$85,000 to \$300,000,000 with a mean of \$18,965,858 median of \$5,550,000 and a standard deviation of \$36,846,643. Metropolitan non-government organisations appear to generally have larger budgets than rural organisations.

The total number of employees in the Metropolitan organisations ranged from 5 to 3,400 with a mean of 359, median of 128 and a standard deviation of 553. The full-time equivalent employee (fte) numbers in these organisations ranged from 2 to 2,350 with a mean of 224, median of 90 and a standard deviation of 372. The total number of employees in rural organisations ranged from 3 to 4,000 with a mean of 255, median of 108 and a standard deviation of 485. The full-time equivalent employee (fte) numbers in these organisations ranged from 1 to 3,000 with a mean of 167, median of 80 and a standard deviation of 360. Metropolitan organisations employee larger work forces if compared to the rural organisations.

Examining the Metropolitan organisations data about their IT operation revealed the number of IT staff in these organisations ranged from 0 to 61 with a mean of 8, median of 1 and a standard deviation of 22. Examination of the Rural organisations data about their IT operation revealed the number of IT staff in these organisations ranged from 0 to 15 with a mean of 4, median of 1 and a standard deviation of 15. These IT operations are modest, with the Metropolitan non-government organisations being larger than their rural counterparts that are generally half their size.

The IT budget in Metropolitan organisations ranged from \$1,500 to \$10,000,000 with a mean of \$677,869 median of \$45,000 and a standard deviation of \$1,714,986. In general, these organisations do not invest many funds in IT. The IT budget in Rural organisations ranged from \$0 to \$2,500,000 with a mean of \$267,642 median of \$40,000 and a standard deviation of \$457,624. Rural IT budgets are substantially

smaller than Metropolitan area organisations. With a high proportion of both types of organisations having relatively small IT budgets of less than \$45,000.

The number of computers in Metropolitan organisations ranged from 2 to 1,200 with a mean of 155 median of 47 and a standard deviation of 239. The number of computers in Rural organisations ranged from 1 to 1,500 with a mean of 97 median of 45 and a standard deviation of 179. Metropolitan organisations had a substantially greater number of computers if compared to the rural organisations.

Overall Metropolitan organisations had reasonably sized budgets (mean of) \$26,525,149 employing (mean of) 359 staff or (mean of) 224 full-time equivalents. There IT function had (mean of) 8 staff, a budget (mean of) of \$677,869 with (mean of) 155 computers. Overall Rural organisations had reasonably sized budgets (mean of) \$18,965,858 employing (mean of) 255 staff or (mean of) 167 full-time equivalents. There IT function had (mean of) 4 staff, a budget (mean of) of \$267,642 with (mean of) 97 computers. Metropolitan non-government organisations have significantly larger budgets, and employ a larger worker force than rural non-government organisations.

5.5.2 Health and Community Services Organisations

Examining the data (Table 5.10 above) from a Health and Community Services perspective reveals the Health organisations' budgets ranged from \$240,000 to \$300,000,000 with a mean of \$6,000,000 median of \$62,756,945 and a standard deviation of \$27,176,808. Community Services organisations budgets ranged from \$85,000 to \$200,000,000 with a mean of \$20,181,507 median of \$4,600,000 and a

standard deviation of \$31,673,871. The budgets of Health organisations are larger than Community Services non-government organisations.

The total number of employees in the Health organisations ranged from 12 to 4,000 with a mean of 115, median of 807 and a standard deviation of 410. The full-time equivalent employee (fte) numbers in these organisations ranged from 4 to 3,000 with a mean of 80, median of 568 and a standard deviation of 261. The total number of employees in Community Services organisations ranged from 3 to 1,400 with a mean of 252, median of 110 and a standard deviation of 303. The full-time equivalent employee (fte) numbers in these organisations ranged from 1 to 1,400 with a mean of 161, median of 82 and a standard deviation of 217. The numbers of employees of Health organisations are substantially larger than Community Services organisations.

An examination of the Health organisations IT operation revealed the number of IT staff in these organisations ranged from 0 to 54 with a mean of 1, median of 21 and a standard deviation of 7. Examining the Community Services organisations data about their IT operation revealed the number of IT staff in these organisations ranged from 0 to 61 with a mean of 5, median of 1 and a standard deviation of 17. Health organisations generally have a larger number of IT staff compared to Community Services organisations, although the average number of IT staff in Community Services organisations is higher.

The IT budget in Health organisations ranged from \$700 to \$7,000,000 with a mean of \$64,000 median of \$1,318,241 and a standard deviation of \$452,408. The IT budget in Community Services organisations ranged from \$0 to \$10,000,000 with a

mean of \$452,170 median of \$23,850 and a standard deviation of \$1,167,437. In general, there is a large variation in the size of IT budgets, with Health organisations allocating larger amounts.

The number of computers in Health organisations ranged from 3 to 1,500 with a mean of 43 median of 291 and a standard deviation of 146. The number of computers in Community Services organisations ranged from 1 to 900 with a mean of 113 median of 48 and a standard deviation of 160. Health organisations had a greater amount of computers compared to Community Services organisations.

Overall Health organisations had reasonably sized budgets (mean of) \$62,756,945 employing (mean of) 807 staff or (mean of) 568 full-time equivalents. Their IT function had (mean of) 21 staff, a budget (mean of) of \$1,318,241 with (mean of) 291 computers. In contrast Community Services organisations had smaller sized budgets (mean of) \$4,600,000 employing less staff (mean of) 110 or (mean of) 82 full-time equivalents. Their IT function had (median of) one staff, a budget (mean of) of \$23,850 with (mean of) 48 computers. Although overall there are considerably more Community Services organisations than Health organisations, the Community Services organisations are of a significantly smaller scale of operation.

5.5.3 Electronic Commerce use by Non-government Organisations

The data confirms (Table 5.11 below) electronic commerce is used by 98% of the respondents to electronically interact with government. The main forms of electronic commerce used by these organisations are; electronic file transfers 73%, electronic business-to-business transactions via the Internet 50%, email exchange for business

89%, web site access 89%, on-line systems access 51% and 10% in the “other” category.

A large number of these organisations (64%) also interact electronically with other organisations predominantly using electronic file transfers, 46% electronic business-to-business transactions via the internet, 87% email exchange for business, 80% web site access, 44% on-line systems access and 7% in the “other” category.

Some organisations (47%) were planning to further expand their use of electronic commerce. With using electronic file transfers 30%, electronic business to business transactions via the internet 25%, email exchange for business 31%, web site access 26%, on-line systems access 27% and 6% in the “other” category.

Table 5.11 Electronic Commerce current and future use.

Electronic Commerce current and future use	Frequency	Valid Percent
Electronic Commerce Interaction with Government	158	98.1
Electronic Commerce Interaction with other Organisations	154	95.7
Electronic Commerce to be used in the future	75	46.6
n = 161		

The main forms of electronic commerce implemented by these non-government organisations for interaction with Government are; email, web sites and electronic file transfers. The table below (Table 5.12) provides an overall summary.

Table 5.12 Type of Electronic Commerce for interaction with Government.

Type of Electronic Commerce for interaction with Government	Frequency	Valid Percent
Electronic File Transfer	117	72.7
Business to Business Transactions	81	50.3
Email	144	89.4
Web Site	144	89.4
On-line Systems	82	50.9
Other	16	9.9
n = 161		

The table below (Table 5.13) summarises the type of electronic commerce that have been implemented in these non-government organisations for electronic interactions with other organisations. Email, web site and electronic file transfer are the three main forms of electronic commerce. There appears to be more electronic commerce with government than other organisations.

Table 5.13 Type of Electronic Commerce for interaction with other organisations.

Type of Electronic Commerce for interaction with other organisations	Frequency	Valid Percent
Electronic File Transfer	103	64.0
Business to Business Transactions	74	46.0
Email	140	87.0
Web Site	129	80.1
On-line Systems	71	44.1
Other	11	6.8
n = 161		

The table below (Table 5.14) summarises the type of electronic commerce that these organisations plan to implement in the future for electronic interactions with

Government. Overall approximately one-third of these non-government organisations plan to increase their usage of electronic commerce.

Table 5.14 Type of Electronic Commerce planned to be used in future

Type of Electronic Commerce planned to be used in future	Frequency	Valid Percent
Electronic File Transfer	48	29.8
Business to Business Transactions	41	25.5
Email	50	31.1
Web Site	42	26.1
On-line Systems	43	26.7
Other	10	6.2
n = 161		

In summary (Table 5.15 below) these non-government organisations use electronic commerce to primarily interact with or support government. Although non-government organisations interact substantially with other organisations the mail use of electronic commerce is email, web site and electronic file transfer. On average one-third of respondents planned to increase their usage of electronic commerce.

Table 5.15 Summary of type of Electronic Commerce usage current and future.

	Electronic Commerce Interaction with Government	Electronic Commerce Interaction with other organisations	Electronic Commerce Interaction Planned future use
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Type of Electronic Commerce planned to be used in future	Frequency	Valid Percent	Frequency	Valid Percent	Frequency	Valid Percent
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Electronic File Transfer	117	72.7	103	64.0	48	29.8
Business to Business Transactions	81	50.3	74	46.0	41	25.5
Email	144	89.4	140	87.0	50	31.1
Web Site	144	89.4	129	80.1	42	26.1
On-line Systems	82	50.9	71	44.1	43	26.7
Other	16	9.9	11	6.8	10	6.2
n = 161						

5.6 Drivers of Electronic Commerce

Section A of the questionnaire sought respondent’s views about factors driving the implementation of electronic commerce in their organisation. Eleven factors identified by the literature review (chapter two) and the semi-structured interviews (chapter three) were presented in the questionnaire in the form of statements for respondents to indicate their views.

The eleven drivers for the adoption of electronic commerce identified by all respondents are: to meet increasing community expectations, to gain a perceived economic advantage, to increase service responsiveness, to increase operational efficiency, to increase process efficiency, to support the need for collaboration between organisations, to gain a cost structure advantage, to gain an opportunity for a service advantage, to support organisational cultural change, to meet a trading partner (government) requirement and to meet a perceived business need. Table 5.16 below

presents the per cent of agreement from all respondents in relation to each of the drivers for the adoption of electronic commerce. These drivers have also been rank-ordered.

Table 5.16 Rank-order of Organisational Drivers for use of Electronic Commerce.

Rank-order	Drivers of Electronic Commerce	% of Agreement
1	To increase organisational efficiency	95.0
2	To increase process efficiency	92.5
3	To increase service responsiveness	91.9
4	To support the need for collaboration between organisations	77.5
5	To meet a perceived business need	73.3
6	To meet a trading partner (government) requirement	68.3
7	To meet increasing community expectations	65.8
8	To support organisational cultural change	60.9
9	To gain an opportunity for a service advantage	57.5
10	To gain a perceived economic advantage	51.9
11	To gain a cost structure advantage	51.6
	n = 161	

The key drivers for the adoption of electronic commerce in non-government organisations appear to be: to increase organisational efficiency (95.0%), to increase process efficiency (92.5%) and to increase service responsiveness (91.9%). These key

drivers have higher than 80% agreement. Other important drivers to support the need for collaboration between organisations (77.5%) and to meet a perceived business need (73.3%).

The order of importance of these drivers for the adoption of electronic commerce in these organisations is as reflected in the rank-order Table 5.16 above.

A further examination of the data from a Health and Community Services organisation perspective (Table 5.17) reveals, the top five drivers of electronic commerce for Health organisations are; (1) to increase organisational efficiency (2) to increase process efficiency (3) to increase service responsiveness (4) collaboration between organisations and (5) trading partner (i.e. government) requirement. These key drivers have higher than 80% agreement.

Table 5.17 Rank-order of Health Sector Organisational Drivers of Electronic Commerce.

	Valid Percent	n	Drivers of Electronic Commerce
1	90.3	50	To increase organisational efficiency
2	89.1	50	To increase process efficiency
3	84.6	50	To increase service responsiveness
4	81.1	50	Collaboration between organisations
5	80.3	50	To meet a trading partner (i.e. government) requirement
6	76.9	50	To meet a perceived business need
		50	To drive organisational cultural change - focus on customer

7	68.0		service
8	66.9	50	To meet an increasing community expectations
9	65.1	50	To meet a perceived economic advantage
10	63.7	49	To gain an opportunity for a service advantage
11	63.7	50	To gain cost structure advantage
		n = 50	

For Community Services organisations (Table5.18 below) the drivers for electronic commerce appear to be; (1) to increase organisational efficiency (2) to increase process efficiency (3) to increase service responsiveness (4) collaboration between organisations and (5) to meet a perceived business need. With the first three key drivers having a higher than 80% agreement. In contrast with the health sector there was common agreement with the first four drivers although the agreement about the fifth driver was different. Also overall there was generally a lower level of agreement from community services respondents about electronic commerce drivers.

Table 5.18 Rank-order of Community Services Sector Organisational Drivers of Electronic Commerce.

	Valid Percent	n	Drivers of Electronic Commerce
1	86.0	111	To increase organisational efficiency
2	83.5	110	To increase process efficiency
3	83.3	111	To increase service responsiveness
4	73.5	110	To assist collaboration between organisations

5	72.1	111	To meet a perceived business need
6	70.9	111	To meet trading partner (i.e. government) requirement
7	70.3	111	To meet increasing community expectations
8	68.3	111	To drive organisational cultural change - focus on customer service
9	66.8	111	To gain an opportunity for a service advantage
10	62.8	109	To gain a cost structure advantage
11	61.8	110	To gain a perceived economic advantage
		n = 111	

A further examination of the data from a geographic perspective, that is metropolitan area and rural area (Table 5.19 and Table 5.20) suggests, the top five drivers of electronic commerce in the metropolitan area are: (1) to increase organisational efficiency, (2) to increase process efficiency, (3) to increase service responsiveness. These key drivers have higher than 80% agreement. With (4) collaboration between organisations and (5) to meet a perceived business need also being important drivers.

Table 5.19 Rank-order of Metropolitan Area Organisational Drivers of Electronic Commerce.

	Valid Percent	n	Drivers of Electronic Commerce
1	86.1	70	To increase organisational efficiency
2	84.3	69	To increase process efficiency
3	84.5	70	To increase service responsiveness

4	76.7	70	Collaboration between organisations
5	73.3	70	To meet a perceived business need
6	71.0	70	To meet a trading partner (i.e. government) requirement
7	70.0	70	To drive organisational cultural change - focus on customer service
8	69.0	70	To meet increasing community expectations
9	65.5	70	To gain an opportunity for a service advantage
10	62.4	69	To gain a perceived economic advantage
11	61.2	68	To gain a cost structure advantage
		n = 70	

In Rural areas (Table 5.20) the top five drivers of electronic commerce are: (1) to increase organisational efficiency, (2) to increase process efficiency, (3) to increase service responsiveness. These key drivers have higher than 80% agreement. Also (4) collaboration between organisations and (5) trading partner, that is, the government requirement, are important drivers. The same top four drivers are consistent for both metropolitan and rural areas, however there is a difference with the fifth driver and sixth driver.

Table 5.20 Rank-order of Rural Regions Organisational Drivers of Electronic Commerce.

	Valid Percent	n	Drivers of Electronic Commerce
		87	To increase organisational efficiency

1	89.0		
2	86.7	87	To increase process efficiency
3	83.6	87	To increase service responsiveness
4	76.5	87	Collaboration between organisations
5	75.5	87	To meet trading partner (i.e. government) requirement
6	73.7	87	To meet a perceived business need
7	69.0	87	To meet increasing community expectations
8	65.8	86	An opportunity for a service advantage
9	66.5	87	To support organisational cultural change - focus on customer service
10	64.9	87	To gain a cost structure advantage
11	62.7	87	To gain a perceived economic advantage
		n = 87	

5.7 Enablers of Electronic Commerce

Section B of the questionnaire identified views on the factors that are enablers to the implementation of electronic commerce in these organisations. In Section B2 respondents were then asked to identify the importance of each of the enablers for

allowing the implementation of electronic commerce in their organisation. These were the same factors defined in Section B.

Table 5.21 below presents data in rank-order of the enablers of electronic commerce for non-government organisations identified by all respondents.

Table 5.21 Rank-order of Enabler factors to the implementation of electronic commerce.

	Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n	Enabler Factor
1	91.7	7.6	0.6	157	Senior Management leadership and support
2	91.3	4.4	4.4	160	Financial Resources
3	89.2	8.9	1.9	158	Telecommunications infrastructure
4	87.3	10.1	2.5	158	Security and Privacy when conducting e-commerce
5	86.3	7.5	6.3	160	Secure email
6	83.0	13.2	3.8	159	Appropriately Skilled Staff
7	77.8	19.2	3.0	99	E-commerce Technology & Integration
8	77.6	18.4	4.1	147	Government Policy and Support
9	71.7	27.0	1.3	152	E-commerce Benefits
10	66.9	21.7	11.5	157	ISP Infrastructure
11	58.1	26.5	15.5	155	E-commerce enabling New Service Models
n = 161					

The key enablers of electronic commerce in non-government organisations (Table 5.21 above) appear to be (1) senior management leadership and support (91.7%), (2) financial resources (91.3%), (3) telecommunications infrastructure (89.2%), (4) security and privacy when conducting electronic commerce (87.3%), (5) secure email (86.3%) and (6) appropriately skilled staff (83.0%). Interestingly, the following enablers while having a reasonable level of agreement also had significant level of neutral response that is neither agreement nor disagreement, (7) Electronic commerce technology and integration (8) Government policy and support, (9) electronic commerce benefits, (10) Internet service provider (ISP) infrastructure and (11) electronic commerce enabling new service models, this response also had a significant disagreement response.

Table 5.22 Rank-order of Enabler (Importance) factors to the implementation of electronic commerce.

Rank Order	Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n	Enabler Factor
1	93.1	5.0	1.9	159	Financial Resources
2	92.4	7.0	0.6	158	Senior Management, leadership and support
3	91.1	5.1	3.8	158	Secure email
4	90.5	7.6	1.9	158	ISP Infrastructure
5	87.9	11.1	1.0	99	E-commerce Technology & Integration

6	86.7	10.8	2.5	158	Security and Privacy when conducting e-commerce
7	83.0	14.5	2.5	159	Appropriately Skilled Staff
8	83.0	15.0	2.0	153	Government Policy and Support
9	75.3	15.6	9.1	154	E-commerce enabling New Service Models
10	68.5	30.1	1.4	146	E-commerce Benefits
n = 161					

Respondents indicated that all enablers of electronic commerce appear to be important to non-government organisations (Table 5.22). The data suggests a high degree of very important ratings by respondents. However appropriately skilled staff, Government policy and support and electronic commerce enabling new service models also have a significant level of neutral response that is neither agreement or disagreement. Also while electronic commerce benefits were seen as reasonably important it had a highly significant neutral response.

5.8 Barriers of Electronic Commerce

Section C of the questionnaire sought views on the factors that are barriers to the implementation of electronic commerce in these organisations. In Section C2 respondents were then asked to identify the importance of overcoming each of the barriers to allow the implementation of electronic commerce in their organisation. These were the same factors defined in Section C.

Table 5.23 below presents the data relating to the barrier factors to the implementation of electronic commerce by non-government organisations as indicated by all respondents.

Table 5.23 Rank-order of Barrier factors to the implementation of electronic commerce.

Rank Order	Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n	Barrier Factor
1	69.0	12.9	18.1	155	The many different data collection requirements of government organisations
2	55.0	19.4	25.6	160	E-commerce investments are a lower organisational priority
3	54.1	22.0	23.9	159	E-commerce benefits are only one-way (i.e.) for Government
4	48.7	20.9	30.4	158	Poor telecommunications infrastructure
5	45.6	14.4	40.0	160	The scale of our operations geographic spread
6	41.0	42.2	16.8	161	Shortage of skilled staff (market place)
7	40.6	47.1	12.3	155	Cost of Internet infrastructure and the availability of financial resources
8	33.3	37.7	28.9	159	The perceived lack of privacy protection of data when conducting electronic commerce
9	32.3	47.7	20.0	130	Insufficient business benefits
10	28.7	53.3	18.0	150	Insufficient appropriate equipment

					availability
11	21.3	36.3	42.5	160	Lack of senior management support
n =161					

The key barriers of electronic commerce in non-government organisations (Table 5.23 above) appear to be; (1) the many different data collection requirements of government organisations (69.0%), electronic commerce investments are a lower organisational priority (55.0%) and electronic commerce benefits are only one-way (i.e.) for Government (54.1%). And while there was agreement that these three factors were barriers to the implementation of electronic commerce in non-government organisations, overall agreement was not strong. Also these factors have a significant level of neutral response, that is, neither agreement nor disagreement. Interestingly, these barriers centre on the perceived lack of co-ordination and the value of the interaction of electronic commerce with government. Also investments in electronic commerce appear to be of a lower priority compared to other investment opportunities in non-government organisations. Poor telecommunications infrastructure, the availability of staff with electronic commerce skills in the market place to recruit and the cost of electronic commerce infrastructure do not appear to be a major barrier. Surprisingly the perceived lack of privacy protection of data when conducting electronic commerce was not seen as a barrier. Likewise, lack of senior management support for electronic commerce was not seen as a barrier in these non-government organisations.

The table below (Table 5.24) presents data in rank-order of the importance of each barrier factor as indicated by all respondents.

Table 5.24 Rank-order of Barrier (Importance) factors to the implementation of electronic commerce.

Rank Order	Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n	Barrier Factor
1	75.2	13.4	11.5	157	The many different data collection requirements of government organisations
2	67.9	21.2	10.9	156	E-commerce investments are a lower organisational priority
3	67.5	12.6	19.9	151	Poor telecommunications infrastructure
4	58.2	27.8	13.9	158	The perceived inadequate security of data when conducting electronic commerce
5	57.0	20.5	22.5	151	E-commerce benefits are only one-way (i.e.) for Government
6	56.7	29.9	13.4	157	The perceived lack of privacy protection of data when conducting electronic commerce
7	56.3	32.3	11.4	158	Shortage of skilled staff (market place)
8	55.0	34.9	10.1	139	Insufficient appropriate equipment availability
9	47.7	33.6	18.8	149	Cost of Internet infrastructure and the availability of financial resources
10	43.8	35.3	20.9	153	Lack of senior management support
11	41.1	38.3	20.6	141	Insufficient business benefits
n = 161					

The most important barriers to the implementation of electronic commerce in these non-government organisations are; (1) the many different data collection requirements of government organisations, (2) electronic commerce investments are a lower organisational priority, and (3) poor telecommunications infrastructure. Interestingly, both poor telecommunications infrastructure and the perceived inadequate security of data when conducting electronic commerce while seen as reasonably important barriers were not seen as barriers in a border sense (Table 5.24 above).

5.9 Key Implementation Issue

Respondents were asked to indicate which single factor formed the major category of issues that impacted the most on the implementation of electronic commerce in their organisation. A table with 18 choices was provided to select the issue from. The possible choices were; resource availability, risk management, organisational capabilities, investments are in other higher priority projects, security, privacy, cost, other organisational priorities, benefits realisation, infrastructure availability, senior management support, telecommunications costs, skilled staff, consistent government technology policy, organisational commitment, backend system integration, technology capabilities and an other category. Table 5.25 below presents the per cent of each response in each issue category. Table 5.26 depicts the rank order of implementation issues.

Table 5.25 Electronic Commerce Key Implementation Issues – Respondent per cent each category of implementation issue.

Valid	Implementation Issue	Valid	Implementation Issue
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%		%	
25	Resource availability	3	Risk management
3	Organisational capabilities	6	Investments are in other higher priority projects
6	Security	1	Privacy
22	Cost	6	Other organisational priorities
4	Benefits realisation	2	Infrastructure availability
3	Senior management support	2	Telecommunications costs
5	Skilled staff	5	Consistent government technology policy
2	Organisational commitment	3	Backend system integration
2	Technology capabilities	1	Other
n = 161			

On examining (Table 5.25) the key implementation issues identified by all non-government organisation respondents there appears to be reasonable support for only two factors; resources and cost. There is lesser support for investments in higher priority projects and security. Respondent’s support for all other implementation issues appears to be relatively weak. The table (Table 5.26) below reflects the respondent rank ordering of implementation issues.

Table 5.26 Electronic Commerce Key Implementation Issues – Respondent rank-order of implementation issues.

	Key Implementation Issue	n	Valid %
1	Resource Availability	39	25.2
2	Cost	34	21.9
3	Investments – in Higher Priority Projects	10	6.5
4	Security	10	6.5
5	Other Organisational Priorities	9	5.8
6	Skilled Staff	8	5.2
7	Government Technology Policy	8	5.2
8	Benefits Realisation	7	4.5
9	Backend System Integration	6	3.9
10	Organisation Capabilities	5	3.2
11	Risk Management	4	2.6
12	Senior Management Support	4	2.6
13	Telecom Costs	3	1.9
14	Infrastructure Availability	2	1.3
15	Organisational Commitment	2	1.3
16	Technology Capabilities	2	1.3

17	Privacy	1	0.7
18	Other	1	0.7
	Missing	6	
	n = 161		

The key implementation issues identified by non-government organisations (Table 5.26) appear to be; resource availability (25%) and cost (22%). Resource availability mainly refers to financial resources that are available funds for implementation. Cost refers to the cost of establishing and maintaining electronic commerce operations.

5.10 Health and Community Services Sector Analysis

This section provides a further examination of the data from a Health sector and Community Services perspective. It is organised in the following manner. First enabler factors are re-examined followed by the relative importance each of these factors is to the respondents. Next barriers factors are re-examined followed by the relative importance each of these factors are to the respondents.

5.10.1 Electronic Commerce Enabler Factors: Health and Community Services

An examination of the data from a Health sector and Community Services perspective (Table 5.27 below) reveals generally consistent support and identification of the same enabler factors in both types of organisations. However there are some differences. Appropriately skilled staff was seen as a greater enabler by the Health organisations compared to the Community Services organisations. Also electronic commerce technology and Integration, telecommunications and infrastructure, secure email,

Government policy and support and electronic commerce benefits all with greater than 10% difference. Most surprisingly, electronic commerce ability to enable new service models was seen as substantially less enabling by the Community Services organisations if compared to the Health organisations.

Table 5.27 Enabler factors to the implementation of electronic commerce Health organisations and Community Services organisations

Health organisations					Community Services organisations			
Valid % of Agree ment	Valid % of Neutral	Valid % of Disagree ment	n	Enabler Factor	Valid % of Agree ment	Valid % of Neutral	Valid % of Disagree ment	n
92.0	6.0	2.0	50	Financial Resources	90.9	3.6	5.5	110
92.0	6.0	2.0	50	Appropriately Skilled Staff	78.9	16.5	4.6	109
86.7	13.3	---	30	E-commerce Technology & Integration	73.9	21.7	4.3	69
98.0	2.0	---	50	Senior Management. Leadership and support	89.1	10.0	0.9	110
64.0	18.0	18.0	50	ISP Infrastructure	67.3	22.7	10.0	110
96.0	4.0	---	50	Telecommunications and infrastructure	85.5	11.8	2.7	110
84.0	16.0	---	50	Security and Privacy when conducting e-commerce	87.3	9.1	3.6	110

94.0	2.0	4.0	50	Secure email	82.9	9.9	7.2	111
84.0	14.0	2.0	50	Government Policy and Support	73.1	22.2	4.6	108
81.6	18.4	---	49	E-commerce Benefits	66.7	31.5	1.9	108
71.4	16.3	12.2	49	E-commerce New Service Models	51.4	31.8	16.8	107

The table (5.28) below presents data in a rank ordering of Enabler factors for the implementation of electronic commerce by Health organisations and Community Services organisations.

Table 5.28 Rank-order of Enabler factors for the implementation of electronic commerce by Health organisations and Community Services organisations.

Health organisations		Community Services organisations	
Rank Order	Health organisations Barrier Factor	Rank Order	Community Services Barrier Factor
1	Financial Resources	1	Financial Resources
2	Appropriately Skilled Staff	2	Senior Management. Leadership and support
3	E-commerce Technology & Integration	3	Security and Privacy when conducting e-commerce
4	Senior Management. Leadership and support	4	Telecommunications infrastructure
5	ISP Infrastructure	5	Secure email

6	Telecommunications infrastructure	6	Appropriately Skilled Staff
7	Security and Privacy when conducting e-commerce	7	E-commerce Technology & Integration
8	Secure email	8	Government Policy and Support
9	Government Policy and Support	9	ISP Infrastructure
10	E-commerce Benefits	10	E-commerce Benefits
11	E-commerce New Service Models	11	E-commerce New Service Models

Interestingly, the Health organisations appear to indicate funds, skilled staff, technology and senior management leadership and support of electronic commerce are the key enablers. However the Community Services organisations have indicated funds, senior management leadership, security and privacy and telecommunications infrastructure are there key enabler factors. (See Table 5.28 above)

When examining the data (Table 5.28) there appears to be only minimal differences in the agreement of enablers between the Health organisations and the Community Services organisations. The main area of difference is electronic commerce benefits factor the Community services organisations see this factor of lesser importance if compared to the Health sector.

The table below (Table 5.29) presents data of Enabler factors where respondents indicated the relative importance each factor contributed to the implementation of electronic commerce in Health organisations and Community Services organisations.

Table 5.29 Enabler (importance) factors to the implementation of electronic commerce.

Health Sector					Community Services Sector			
Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n	Enabler Factor	Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n
89.8	10.2	---	49	Financial Resources	93.7	3.6	2.7	104
89.8	10.2	---	49	Appropriately Skilled Staff	80.0	16.4	3.6	110
82.1	17.9	---	28	E-commerce Technology & Integration	90.1	8.5	1.4	71
95.9	4.1	---	49	Senior Management. Leadership and support	90.8	8.3	.9	109
95.9	2.0	2.1	49	ISP & Telecommunications and infrastructure	88.1	10.1	1.8	109
85.4	12.5	2.1	48	Security and Privacy when conducting e-commerce	87.3	10.0	2.7	110
93.9	4.1	2.0	49	Secure email	89.9	5.5	4.6	109
85.7	12.2	2.1	49	Government Policy and Support	81.0	17.1	1.9	105

73.5	26.5	---	49	E-commerce Benefits	64.6	33.3	2.1	49
79.6	12.2	8.2	49	e-commerce New Service Models	72.6	17.9	9.4	106

The table below (Table 5.30) presents data of Enabler factors in a rank order for the implementation of electronic commerce by Health organisations and Community Services organisations.

When examining the relative importance of these enablers (Table 5.30 below) for these non-government organisations the data suggest senior management leadership and support, Internet service providers (ISP) and telecommunications and infrastructure and secure email are most important to health sector organisations however funds, senior management leadership and support and electronic commerce technology and integration are the most important enablers for the Community Services organisations.

Table 5.30 Rank-order of Enabler (Importance) factors for the implementation of electronic commerce by Health Sector and Community Services Sector.

Rank Order	Health Sector Enabler Factors	Rank Order	Community Services Enabler Factors
1	Senior Management Leadership and support	1	Financial Resources
2	ISP & Telecommunications infrastructure	2	Senior Management Leadership and support

3	Secure email	3	e-commerce Technology & Integration
4	Financial Resources	4	Secure email
5	Appropriately Skilled Staff	5	ISP & Telecommunications infrastructure
6	Government Policy and Support	6	Security and Privacy when conducting e-commerce
7	Security and Privacy when conducting e-commerce	7	Government Policy and Support
8	e-commerce Technology & Integration	8	Appropriately Skilled Staff
9	e-commerce New Service Models	9	e-commerce New Service Models
10	e-commerce Benefits	10	e-commerce Benefits

5.10.2 Electronic Commerce Barrier Factors: Health and Community Services

An examination of the data from a Health sector and Community Services perspective (Table 5.31 below) reveals generally consistent support and identification of the same barrier factors in both types of organisations. However there are some differences: Insufficient appropriate equipment availability was seen as a greater barrier by the Health organisations compared to the Community Services organisations. Also poor telecommunications infrastructure, the perceived lack of privacy protection of data when conducting electronic commerce and electronic commerce benefits are only one-way, that is, for the Government all with greater than 10% difference. Most surprisingly, the many different data collection requirements of government organisations were seen as a substantially greater barrier by the Health organisations

if compared to the Community Services organisations. This may be caused by a greater collection requirement imposed on Health organisations when compared to the Community Services organisations.

Table 5.31 Barrier factors to the implementation of electronic commerce.

Health Sector					Community Services Sector			
Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n	Factor	Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n
41.7	45.8	12.5	48	Cost of Internet infrastructure and the availability of financial resources	40.2	47.7	12.1	107
44.0	48.0	8.0	50	Shortage of skilled staff (market place)	39.6	39.6	20.7	111
36.7	46.7	16.3	49	Insufficient appropriate equipment availability	24.8	56.4	18.8	101
20.0	34.0	46.0	50	Lack of senior management support	21.8	37.3	40.9	110
58.0	16.0	26.0	50	Poor telecommunications infrastructure	44.4	23.1	32.4	108
44.0	28.0	28.0	50	The perceived lack of privacy protection of data when conducting electronic commerce	28.4	42.2	29.4	109
87.5	2.1	10.4	48	The many different data	60.7	17.8	21.5	107

				collection requirements of government organisations				
64.0	16.0	20.0	50	e-commerce benefits are only one-way (i.e.) for Government	49.5	24.8	25.7	109
32.4	48.6	18.9	37	Insufficient business benefits	32.3	47.3	20.4	93
46.0	10.0	44.0	50	The scale of our operations geographic spread	45.5	16.4	38.2	110
54.0	14.0	32.0	50	e-commerce investments are a lower organisational priority	55.5	21.8	22.7	110

The table below (Table 5.32) presents data in a rank ordering of Barrier factors for the implementation of electronic commerce by Health organisations and Community Services organisations.

Table 5.32 Rank-order of Barrier factors for the implementation of electronic commerce by Health Sector and Community Services Sector.

Rank Order	Health Sector Barrier Factor	Rank Order	Community Services Barrier Factor
1	The many different data collection requirements of government organisations	1	The many different data collection requirements of government organisations
2	e-commerce benefits are only one-way (i.e.) for Government	2	e-commerce investments are a lower organisational priority
3	Poor telecommunications infrastructure	3	e-commerce benefits are only one-way (i.e.) for Government

4	e-commerce investments are a lower organisational priority	4	The scale of our operations geographic spread
5	The scale of our operations geographic spread	5	Poor telecommunications infrastructure
6	Shortage of skilled staff (market place)	6	Cost of Internet infrastructure and the availability of financial resources
7	The perceived lack of privacy protection of data when conducting electronic commerce	7	Shortage of skilled staff (market place)
8	Cost of Internet infrastructure and the availability of financial resources	8	Insufficient business benefits
9	Insufficient appropriate equipment availability	9	The perceived lack of privacy protection of data when conducting electronic commerce
10	Insufficient business benefits	10	Insufficient appropriate equipment availability
11	Lack of senior management support	11	Lack of senior management support

Interestingly, although there is a slight ordering difference in the top five barriers both Health and Community Service organisations identified the same five barriers. Overall both types of organisations have identified lack of senior management support as not a strong barrier to the implementation of electronic commerce. (See Table 5.32 above)

The table below (Table 5.33) presents data of Barrier factors where respondents indicated their view of the relative importance of each factor for the implementation

of electronic commerce by Health organisations and Community Services organisations.

Table 5.33 Barrier (Importance) factors to the implementation of electronic commerce.

Health Sector					Community Services Sector			
Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n	Factor	Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n
41.3	32.6	26.1	46	Cost of Internet infrastructure and the availability of financial resources	50.5	34.0	15.5	103
63.8	27.7	8.5	47	Shortage of skilled staff (market place)	53.2	34.2	12.6	111
62.9	25.7	11.4	35	Insufficient appropriate equipment availability	52.1	38.3	9.6	94
45.7	23.9	30.4	46	Lack of senior management support	43.0	40.2	16.8	107
72.9	8.3	18.8	48	Poor telecommunication s infrastructure	65.0	14.6	20.4	103

64.6	18.8	16.7	48	The perceived lack of privacy protection of data when conducting electronic commerce	55.5	31.8	12.7	110
89.4	2.1	8.5	47	The many different data collection requirements of government organisations	69.1	18.2	12.7	110
67.4	8.7	23.9	46	e-commerce benefits are only one-way (i.e.) for Government	52.4	25.7	21.9	105
39.5	37.2	23.3	43	Insufficient business benefits	41.4	39.4	19.2	99
70.8	16.7	12.5	48	e-commerce investments are a lower organisational priority	66.7	23.1	10.2	108

The table below (Table 5.34) presents data of Barrier factors in a rank-order of importance for the implementation of electronic commerce by Health organisations and Community Services organisations.

When examining the relative importance of these enablers (Table 5.34 below) for these non-government organisations the data suggests the many different data collection requirements of government organisations, poor telecommunications

infrastructure, electronic commerce investments are a lower organisational priority, electronic commerce benefits are only one-way, that is, for the Government and the perceived lack of privacy protection of data when conducting electronic commerce are the most important enablers for these organisations

Table 5.34 Rank-order of Barrier (Importance) factors for the implementation of electronic commerce by Health Sector and Community Services Sector.

Rank Order	Health Sector Barrier Factor	Rank Order	Community Services Barrier Factor
1	The many different data collection requirements of government organisations	1	The many different data collection requirements of government organisations
2	Poor telecommunications infrastructure	2	e-commerce investments are a lower organisational priority
3	e-commerce investments are a lower organisational priority	3	Poor telecommunications infrastructure
4	e-commerce benefits are only one-way (i.e.) for Government	4	The perceived lack of privacy protection of data when conducting electronic commerce
5	The perceived lack of privacy protection of data when conducting electronic commerce	5	Shortage of skilled staff (market place)
6	Shortage of skilled staff (market place)	6	e-commerce benefits are only one-way (i.e.) for Government
7	Insufficient appropriate equipment availability	7	Insufficient appropriate equipment availability

8	Lack of senior management support	8	Cost of Internet infrastructure and the availability of financial resources
9	Cost of Internet infrastructure and the availability of financial resources	9	Lack of senior management support
10	Insufficient business benefits	10	Insufficient business benefits
11	The scale of our operations geographic spread	11	The scale of our operations geographic spread

5.11 Metropolitan Area and Rural Regions Analysis

This section provides a further examination of the data from a geographic perspective that is Metropolitan area and rural regions. It is organised in the following manner. First enabler factors are re-examined followed by the relative importance each of these factors is to the respondents. Next barriers factors are re-examined followed by the relative importance each of these factors are to the respondents.

5.11.1 Electronic Commerce Enabler Factors: Metropolitan Area and Rural Regions

An examination of the data from a Metropolitan area and rural regions perspective (Table 5.35 below) reveals generally consistent support and identification of the same enabler factors in both organisations. However there are some minor differences. Electronic commerce technology & integration, telecommunications and infrastructure was seen as a greater enabler by the Metropolitan area organisations compared to the Rural regions organisations. Also electronic commerce benefits appear to be a greater enabler for rural regions organisations compared to Metropolitan area organisations. Interestingly there was significant neutral response for electronic commerce technology and integration, Internet service provider (ISP)

Infrastructure, Government policy and support and electronic commerce new service models from both types of organisations.

Table 5.35 Enabler factors to the implementation of electronic commerce Metropolitan Area and Rural Regions analysis.

Metropolitan Area					Rural Regions			
Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n	Factor	Valid % of Agreement	Valid % of Neutral	Valid % of Disagreement	n
91.4	5.7	2.9	70	Financial Resources	90.7	3.5	5.8	86
82.9	14.3	2.9	70	Appropriately Skilled Staff	82.4	12.9	4.7	85
80.0	20.0	---	40	e-commerce Technology & Integration	75.4	19.3	5.3	57
91.4	8.6	---	70	Senior Management. Leadership and support	91.9	7.0	1.2	86
65.2	20.3	14.5	69	ISP Infrastructure	67.8	20.7	11.5	87
92.8	7.2	---	69	Telecommunications and infrastructure	85.1	11.5	3.4	87
88.6	8.6	2.9	70	Security and Privacy when conducting e-commerce	83.7	14.0	2.3	86
84.3	7.1	8.6	70	Secure email	87.4	8.0	4.6	87
72.5	23.2	4.3	69	Government Policy and Support	78.8	17.6	3.5	85

65.7	31.4	2.9	70	e-commerce Benefits	75.9	24.1	---	83
55.9	29.4	14.7	68	e-commerce New Service Models	57.1	26.2	16.7	84

The table below (Table 5.36) presents data in a rank ordering of Enabler factors for the implementation of electronic commerce by Metropolitan Area and Rural Regions organisations.

Table 5.36 Rank-order of Enablers factors for the implementation of electronic commerce by Metropolitan Area and Rural Regions.

Rank Order	Metropolitan Area Enabler Factors	Rank Order	Rural Regions Enabler Factors
1	Telecommunications infrastructure	1	Senior Management Leadership and support
2	Financial Resources	2	Financial Resources
3	Senior Management Leadership and support	3	Secure email
4	Security and Privacy when conducting e-commerce	4	Telecommunications infrastructure
5	Secure email	5	Security and Privacy when conducting e-commerce
6	Appropriately Skilled Staff	6	Appropriately Skilled Staff
7	e-commerce Technology & Integration	7	Government Policy and Support
8	Government Policy and Support	8	e-commerce Benefits

9	e-commerce Benefits	9	e-commerce Technology & Integration
10	ISP Infrastructure	10	ISP Infrastructure
11	e-commerce New Service Models	11	e-commerce New Service Models

The data reveals (Table 5.36) the number one enabler for the Metropolitan Area organisations is telecommunications infrastructure this incudes both its availability and its tariffs. For Rural Region organisations senior management respondents see leadership and support for electronic commerce as the key enabler. The top five enablers are the same for both areas although the sequence slightly varies. However, both areas see ISP infrastructure and electronic commerce allowing new service models as relatively low order enabling factors.

The table below (Table 5.37) presents data of Enabler factors where respondents indicated their relative importance for the implementation of electronic commerce by Metropolitan Area organisations and Rural Region organisations.

Table 5.37 Enabler (importance) factors to the implementation of electronic commerce Metropolitan Area and Rural Regions analysis.

Metropolitan Area					Rural Regions			
Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n	Enabler Factor	Valid % of Very Important Factor	Valid % of Reasonably Important Factor	Valid % of Not Important Factor	n
92.9	5.7	1.4	70	Financial Resources	91.9	5.8	2.3	86

85.7	12.9	1.4	70	Appropriately Skilled Staff	80.0	16.5	3.5	85
89.7	10.3	---	39	e-commerce Technology & Integration	86.2	12.1	1.7	58
91.3	8.7	---	69	Senior Management. Leadership and support	94.1	4.7	1.2	85
91.4	8.6	---	70	ISP & Telecommunications and infrastructure	89.3	7.1	3.6	84
87.1	10.0	2.9	70	Security and Privacy when conducting e-commerce	85.7	11.9	2.4	84
88.4	5.8	5.8	69	Secure email	92.9	4.7	2.4	85
76.1	22.4	1.5	67	Government Policy and Support	86.7	10.8	2.4	83
61.5	35.4	3.1	65	e-commerce Benefits	72.2	27.8	---	79
77.6	14.9	7.5	67	e-commerce New Service Models	71.4	17.9	10.7	84

Generally there were no significant differences between Metropolitan Area organisations and Rural Region organisations views of the importance rating of electronic commerce enabler factors. Although rural regions appear to have placed

relatively higher importance on both Government policy and electronic commerce benefits.

The table below (Table 5.38) presents data in rank-order of Enabler factors where respondents indicated their relative importance for the implementation of electronic commerce by Metropolitan Area organisations and Rural Region organisations.

Table 5.38 Rank-order of Enablers (Importance) factors for the implementation of electronic commerce by Metropolitan Area and Rural Regions.

Rank Order	Metropolitan Area Enabler Factors	Rank Order	Rural Regions Enabler Factors
1	Financial Resources	1	Senior Management. Leadership and support
2	ISP & Telecommunications and infrastructure	2	Secure email
3	Senior Management. Leadership and support	3	Financial Resources
4	e-commerce Technology & Integration	4	ISP & Telecommunications and infrastructure
5	Secure email	5	Government Policy and Support
6	Security and Privacy when conducting e-commerce	6	e-commerce Technology & Integration
7	Appropriately Skilled Staff	7	Security and Privacy when conducting e-commerce

8	e-commerce New Service Models	8	Appropriately Skilled Staff
9	Government Policy and Support	9	e-commerce Benefits
10	e-commerce Benefits	10	e-commerce New Service Models

5.11.2 Electronic Commerce Barrier Factors: Metropolitan Area and Rural Regions

An examination of the Barrier data from a Metropolitan Area organisations and Rural Region organisations perspective (Table 5.39 below) reveals generally consistent support and identification of the same enabler factors in both organisations. However there are some differences Rural Regions identified both electronic commerce benefits are only one-way (i.e.) for Government and the scale of our operations geographic spread as being significantly greater barriers to the implementation of electronic commerce than the Metropolitan organisations.

Table 5.39 Barrier factors to the implementation of electronic commerce Metropolitan Area and Rural Regions analysis.

Metropolitan Area					Rural Regions			
Valid % of Agree ment	Valid % of Neutral	Valid % of Disagre ement	n	Barrier Factor	Valid % of Agree ment	Valid % of Neutral	Valid % of Disagre ement	n
38.2	50.0	11.8	68	Cost of Internet infrastructure and the	39.8	47.0	13.3	83

				availability of financial resources				
38.6	42.9	18.6	70	Shortage of skilled staff (market place)	40.2	43.7	16.1	87
28.1	54.7	17.2	64	Insufficient appropriate equipment availability	25.6	54.9	19.5	82
21.7	37.7	40.6	69	Lack of senior management support	19.5	34.5	46.0	87
45.6	23.5	30.9	68	Poor telecommunications infrastructure	48.8	19.8	31.4	86
36.2	40.6	23.2	69	The perceived lack of privacy protection of data when conducting electronic commerce	30.2	36.0	33.7	86
66.2	11.8	22.1	68	The many different data collection requirements of government organisations	71.1	14.5	14.5	83
47.1	22.9	30.0	70	e-commerce benefits are only one-way (i.e.) for Government	60.0	21.2	18.8	85
33.9	50.0	16.1	56	Insufficient business benefits	30.6	45.8	23.6	72
34.3	18.6	47.1	70	The scale of our operations geographic spread	52.3	11.6	36.0	86
52.9	24.3	22.9	70	e-commerce investments are a lower organisational priority	55.8	15.1	29.1	86

The table below (Table 5.40) presents data in rank-order of Barrier factors for the implementation of electronic commerce by Health organisations and Community Services organisations.

Table 5.40 Rank-order of Barrier factors for the implementation of electronic commerce by Metropolitan Area and Rural Regions.

Rank Order	Metropolitan Area Barrier Factors	Rank Order	Rural Regions Barrier Factors
1	The many different data collection requirements of government organisations	1	The many different data collection requirements of government organisations
2	e-commerce investments are a lower organisational priority	2	e-commerce benefits are only one-way (i.e.) for Government
3	e-commerce benefits are only one-way (i.e.) for Government	3	e-commerce investments are a lower organisational priority
4	Poor telecommunications infrastructure	4	The scale of our operations geographic spread
5	Shortage of skilled staff (market place)	5	Poor telecommunications infrastructure
6	Cost of Internet infrastructure and the availability of financial resources	6	Shortage of skilled staff (market place)
7	The perceived lack of privacy protection of data when conducting electronic commerce	7	Cost of Internet infrastructure and the availability of financial resources
8	The scale of our operations geographic spread	8	Insufficient business benefits

9	Insufficient business benefits	9	The perceived lack of privacy protection of data when conducting electronic commerce
10	Insufficient appropriate equipment availability	10	Insufficient appropriate equipment availability
11	Lack of senior management support	11	Lack of senior management support
n = 161			

There appears to be only a slight ordering difference in the top five barriers. Both Metropolitan and rural area organisations identified the same five barriers. Overall both types of organisations have identified lack of senior management support as not a particular barrier to the implementation of electronic commerce. (See Table 5.40 above) However, Rural organisations indicate the scale of their operations over a wide geographic spread is a relatively higher order barrier if compared to the organisations supporting the Metropolitan areas.

The table below (Table 5.41) presents data of Barrier factors where respondents indicated their relative importance for the implementation of electronic commerce by Metropolitan organisations and rural area organisations.

Table 5.41 Barrier (Importance) factors to the implementation of electronic commerce Metropolitan Area and Rural Regions analysis.

Metropolitan Area					Rural Regions			
Valid % of Very	Valid % of Reasonably	Valid % of	n	Barrier Factor	Valid % of Very	Valid % of Reasonably	Valid % of Not	n

Important Factor	Important Factor	Not Important Factor			Important Factor	Important Factor	Important Factor	
49.2	35.4	15.4	65	Cost of Internet infrastructure and the availability of financial resources	43.8	33.8	22.5	80
52.2	36.2	11.6	69	Shortage of skilled staff (market place)	60.0	28.2	11.8	85
57.4	31.5	11.1	54	Insufficient appropriate equipment availability	52.1	38.4	9.6	73
47.8	34.3	17.9	67	Lack of senior management support	40.2	36.6	23.2	82
64.6	15.4	20.0	65	Poor telecommunication s infrastructure	68.3	11.0	20.7	82
58.0	31.9	10.1	69	The perceived lack of privacy protection of data when conducting electronic commerce	54.8	29.8	15.5	84
75.4	11.6	13.0	69	The many different data collection requirements of government organisations	75.0	14.3	10.7	84

50.7	19.4	29.9	67	e-commerce benefits are only one-way (i.e.) for Government	61.3	21.3	17.5	80
48.4	32.3	19.4	62	Insufficient business benefits	33.8	44.2	22.1	77
69.6	17.4	13.0	69	e-commerce investments are a lower organisational priority	67.5	22.9	9.6	83
n = 161								

The greatest difference in views about the importance of the factors being barriers to the implementation of electronic commerce are the rural areas identifying the shortage of skilled staff (market place) to recruit to implement and support electronic commerce and electronic commerce benefits appear to be only one-way, that is, for the Government. While the Metropolitan area indicated that insufficient business benefits were seen as a greater barrier to electronic commerce compared to rural organisations.

The table below (Table 5.42) presents data of Barrier factors in a rank-order of importance for the implementation of electronic commerce by Metropolitan and Rural area organisations.

Table 5.42 Rank-order of Barrier (Importance) factors for the implementation of electronic commerce by Metropolitan Area and Rural Regions.

Rank Order	Metropolitan Area Barrier Factors	Rank Order	Rural Regions Barrier Factors
1	The many different data collection requirements of government organisations	1	The many different data collection requirements of government organisations
2	e-commerce investments are a lower organisational priority	2	Poor telecommunications infrastructure
3	Poor telecommunications infrastructure	3	e-commerce investments are a lower organisational priority
4	The perceived lack of privacy protection of data when conducting electronic commerce	4	e-commerce benefits are only one-way (i.e.) for Government
5	Insufficient appropriate equipment availability	5	Shortage of skilled staff (market place)
6	Shortage of skilled staff (market place)	6	The perceived lack of privacy protection of data when conducting electronic commerce
7	e-commerce benefits are only one-way (i.e.) for Government	7	Insufficient appropriate equipment availability
8	Cost of Internet infrastructure and the availability of financial resources	8	Cost of Internet infrastructure and the availability of financial resources
9	Insufficient business benefits	9	Lack of senior management support
10	Lack of senior management support	10	Insufficient business benefits

11	The scale of our operations geographic spread	11	The scale of our operations geographic spread
n = 161			

The data suggests (Table 5.42) that there are not significant differences in the barriers of electronic commerce in rank-order of importance. While the scale of the operations geographic spread, featured reasonably high as a barrier for rural organisations it was not ranked highly as an important barrier. In fact both Metropolitan and Rural areas ranked it the least important of all barriers.

5.12 Conclusion

The major findings from the analysis presented in this chapter are in four main categories: the key drivers for the implementation of electronic commerce in non-government organisations. The key enablers of electronic commerce and the barriers to the implementation of electronic commerce and finally the key implementation issues for non-government organisations.

Overall response rate to the questionnaire from non-government organisations in the sample frame was satisfactory, with a rate of 33.4% or 161 out of 484. Appropriate statistical analysis for ordinal data was applied to the responses.

The data identifies the key drivers (or why these organisations are doing this) for the adoption of electronic commerce in non-government organisations appear to be:

- to increase organisational efficiency,
- to increase process efficiency and

- to increase service responsiveness.

These key drivers have higher than 80% agreement from respondents. Other important drivers are; to support the need of collaboration between organisations and to meet a perceived business need.

The data indicates the key enablers (or the factors that make possible or assist) of electronic commerce in non-government organisations appear to be;

- senior management leadership and support,
- financial resources,
- telecommunications infrastructure,
- security and privacy when conducting electronic commerce,
- secure email and
- appropriately skilled staff to implement and support electronic commerce.

Overall there were a number of enablers that had a reasonable level of agreement but also a significant level of neutral response that is neither agreement nor disagreement. They were; electronic commerce technology and integration, Government policy and support, electronic commerce benefits, and Internet service provider (ISP) Infrastructure. Also electronic commerce enabling new service models had a significant disagreement response rate. This appears to reflect a view that it was not considered an enabler of electronic commerce.

The data suggests the key barriers (or the factors that block or make difficult) of electronic commerce in non-government organisations appear to be;

- the many different data collection requirements of government organisations,
- electronic commerce investments are a lower organisational priority and
- electronic commerce benefits are only one-way, that is, for the Government.

And while there was agreement that these three factors were barriers to the implementation of electronic commerce in non-government organisations, overall agreement was not strong. Also these factors have a significant level of neutral response, that is, neither agreement nor disagreement. These key barriers appear to be around the perceived lack of co-ordination and the value of the interaction of electronic commerce with government. Investments in electronic commerce also appear to be of a lower priority compared to other investment opportunities in non-government organisations. Poor telecommunications infrastructure, the availability of staff with electronic commerce skills and the cost of electronic commerce infrastructure do not appear to be major barriers.

Interestingly, the perceived lack of privacy protection of data when conducting electronic commerce was not seen as a barrier. In addition, the lack of senior management support for electronic commerce was not seen as a barrier in these non-government organisations.

The data identifies the key implementation issues identified by non-government organisations appear to be only two main factors; resources and cost with reasonable support from respondents. Investments in higher priority projects and security had somewhat lesser support. Respondent's support for all other issues appeared to be relatively weak.

Data from this Chapter (5) and Chapter 4 the semi-structured interviews are combined in the next Chapter to form the basis of informing the research questions and research aims proposed in Chapter 1.

CHAPTER SIX FINDINGS

6.1 Introduction

This chapter presents the findings of this research. The aims of this research were to identify the key factors for implementation of electronic commerce between non-government organisations and Government.

The factors identified in the Literature (Chapter 2), the data collected through the face-to-face semi-structured interviews and analysed (Chapter 4) and the data collected from the postal survey and analysed (Chapter 5) are drawn together in this chapter. The analysed data supports and informs the views presented in the following Sections.

This chapter is organised in the following manner: Section 6.2 General Findings Demographics, Sections 6.3 Electronic Commerce Drivers, Section 6.4 Electronic Commerce Implementation issues, Section 6.5 Electronic Commerce Barriers, Section 6.6 Electronic Commerce Enablers and Section 6.7 presents a conclusion to the Chapter.

6.2 General Findings Demographics

This section is organised in the following manner: Section 6.2.1 provides the semi-structure interview demographics, while Section 6.2.2 presents the survey response demographics.

6.2.1 Semi-structure Interview Demographics

The interviews undertaken in this phase of the research were a fair representation of non-government organisations in the Health and Community services sector. In addition, in the sample there was a fair representation of both metropolitan and rural area non-government organisations.

The interviews represented 3(or 50%) community services and 3 health services (or 50%) non-government organisations. Of these six organisations, 4 (or 67%) serviced the metropolitan area and 2(or 33%) serviced rural areas. These organisations represented a broad cross section of non-government organisations in the Health and Community Services sector. The sample included large and medium, and metropolitan and rural area non-government organisations.

All of the non-government organisations participating in the interviews used electronic commerce to interact with government. This interaction was based on email and electronic file transfers. Each organisation also had a web site. These organisations also had electronic commerce interactions with other organisations.

Those interviewed held IT management roles in their organisations and comprised of two Chief Information Officers and four IT Directors. The organisations budgets ranged from \$30,000,000 to \$300,000,000. The total number of employees in these organisations ranged from 700 to 5,500. The full-time equivalent employee numbers in these organisations ranged from 550 to 4,000.

Examination of the data about their IT operation revealed the number of IT staff in these organisations ranged from 4 to 40. Their IT budgets ranged from \$450,000 to \$8,000,000. The number of computers in these organisations ranged from 400 to 3,000. The percentage of computers with Internet access in these organisations ranged from 45% to 100%.

6.2.2 Survey Questionnaire Response Demographics

In this phase, the interviews with Health and Community services sector organisations undertaken were considered to fairly represent non-government organisations more generally. In addition, the sample frame fairly represented both metropolitan and rural area non-government organisations.

The questionnaire response reflected 31% (or 50) health services and 69% (or 111) community services non-government organisations. Examining these 161 responses another way, 43.5% (or 70) serviced metropolitan areas and 54% (or 87) serviced rural areas. A further 2.5% (or 4) serviced both metropolitan and rural areas. The responses were consistent with the overall sample frame that also comprised of approximately one-third non-government health organisations and two-thirds non-government community services organisations. Health organisations are typically fewer and often larger than the community services based organisations.

The data confirms a large majority of respondents (98%) used electronic commerce to interact with government. The greater proportion of interaction was email (89.4%) with the same proportion of these organisations also having a web site operation (89.4%). Electronic file transfer was the next most common form of electronic interaction with 72.7% organisations.

On the other hand, the responding organisations had less interaction with other organisations. Email interaction was 87%, web site 80% and electronic file transfer with other organisations was identified as 64% by respondents.

The data suggests respondents appear to have greater electronic commerce interactions with Government organisations, if compared to their interactions with other organisations.

The positions those that responded to the questionnaire held within their organisations were predominantly non-IT management roles. Overall one-third (or 31%) of respondents were at the Chief Executive Officer (CEO) level, with approximately two-thirds (or 62%) of respondents at the Director level or above. Chief Information Officers and Managers of IT accounted for approximately 13% of respondents, while approximately 25% were made up of respondents with other job titles. Although a higher response rate was expected from those with IT related job titles, the completion of the questionnaire by a low number of IT related respondents was most likely due to 2 main factors. The first being the questionnaire was directed to the CEO of each organisation seeking their involvement in the study, although also suggesting that if they were not the most appropriate person then they should pass this onto the most appropriate person. A surprisingly large percentage completed the questionnaire. Secondly, when analysing the data about organisations, it became apparent that a large percentage of organisations either had very few or no IT staff. An overall response from non-IT senior management is valuable as their attitudes to the factors

that will enable or block the use of electronic commerce in non-government organisations is more likely to provide real insights.

Details of the level of education of respondents suggested those answering the questionnaire were well educated with 75% having obtained a Bachelor's Degree or higher.

The organisations represented in the analysis were broad and varied. There were both Health and Community Services. Both large and small, metropolitan area and rural area, non- government organisations that responded to the questionnaire.

The organisations' budgets ranged from \$85,000 to \$300,000,000 with a mean of \$2,418,115 median of \$6,500,000 and an interquartile range of \$28,425,000.

The total number of employees in these organisations ranged from 3 to 4,000 with a mean of 308, median of 120 and an interquartile range of 359. The full-time equivalent employee (fte) numbers in these organisations ranged from 1 to 3,000 with a mean of 199, median of 77 and an interquartile range of 224. This suggested that these organisations operate with a relatively high proportion of part-time staff approximately 25% of the staff are not full-time.

Examination of the data about their IT operation revealed the number of IT staff in these organisations ranged from 0 to 61 with a mean of 3 (2.9), median of 1 and an interquartile range of 3 (2.8) and a standard deviation of 8 (7.6). Many of these

organisations do not employ many, if any IT staff. This potentially affects their ability to use information technology, such as that needed for electronic commerce.

The IT budget in these organisations ranged from \$0 to \$10,000,000 with a mean of \$520,554, median of \$50,000 and an interquartile range of \$442,000. In general, these organisations do not invest many funds in IT. A number of these organisations make no explicit budget allocation for any form of Information Technology.

The number of computers in these organisations ranged from 1 to 1,500 with a mean of 124 (123.7) median of 40 and an interquartile range of 115.

The percentage of computers with Internet access in these organisations ranged from 2% to 100% with a mean of 83.3% and an interquartile range of 20%. There are a relatively high proportion of computers with Internet access in these organisations.

Overall these non-government organisations had reasonably sized budgets (median of) \$6,500,000, employing (median of) 120 staff or (median of) 77 full-time equivalents. Their IT function had (median of) one staff, a budget (median) of \$50,000 with (median of) 40 computers of which approximately 80 % had Internet access. The data suggests that these organisations' budgets are the size of a small to medium sized organisation that has a modest information technology capability from both a staff and budgetary perspective.

6.3 Drivers of Electronic Commerce

Drivers of electronic commerce are the factors that drive why these non-government organisations are implementing electronic commerce. This section is organised in the

following manner: Section 6.3.1 describes findings from the semi-structured interviews identifying the drivers of electronic commerce, Section 6.3.2 presents the survey drivers of electronic commerce, Section 6.3.3 details the findings of the survey questionnaire identifying the electronic commerce drivers in non-government organisations, while Section 6.3.4 presents the findings of the survey questionnaire of electronic commerce drivers for the non-government organisations in Metropolitan and Rural areas.

6.3.1 Semi-structured Interviews – Drivers of Electronic Commerce

During the exploratory phase of this study, the semi-structured interviews (Chapter 4) with six health and community services organisations a number of key drivers that impact on the implementation of electronic commerce were identified. Table 4.2 electronic commerce Drivers provides a summary. These drivers were used to inform the design of the questionnaire that was posted to non-government health and community services organisations. These identified drivers were combined with those identified in the literature (Chapter 2) then coded with and tested accordingly through the postal questionnaire (Chapter 5).

The key drivers of electronic commerce in non-government organisations identified from the semi-structured interviews were:

(a) a majority of interview participants claimed electronic commerce would improve efficiency and was a key driver for its implementation.

(b) There was strong agreement that Government direction, or requirements to use electronic commerce were driving its implementation. Government was increasingly demanding its use.

(c) Many interviewees identified a belief that electronic commerce would be a new or complimentary service channel and therefore a key factor driving implementation. Often, electronic commerce was seen as a complimentary service channel on its initial implementation, however it was expected to replace some traditional service channels over time. For example less telephone or service counters contact for those services that could be delivered equally well electronically.

(d) Some organisations proposed electronic commerce would enable work process improvement, as less paper transactions were required as traditional paper flows were replaced with electronic workflow.

(e) Some identified using electronic commerce would reduce operational costs. It was thought for some basic clerical functions that labour costs might reduce as paper was replaced with electronic based systems.

(f) Management direction to implement electronic commerce was a factor. This was seen as one of management's strategies to change the organisations operation.

(g) Electronic commerce would allow better access to data. This was based on a belief that electronic commerce would provide relatively easy and low cost access to data.

For example, it may become cost effective to establish access between patients and their non-government organisation that was their service provider.

(h) Electronic commerce would allow better external access to the organisation and its services. This was particularly important for system integration with suppliers to allow supply chain management. On the other hand, other service organisations in the same sector would also be able to easily access each other as necessary.

(i) and Electronic commerce would make these non-government organisations more open and accessible to business and community.

6.3.2 Survey Questionnaire – Drivers of Electronic Commerce

There was strong agreement from the survey participants that all of the drivers identified by participants of the semi-structured interviews were key factors driving the implementation of electronic commerce to a greater degree.

The drivers for the adoption of electronic commerce in these organisations can be divided into 3 broad categories. Those with a strong level of agreement, that is key drivers (greater than 80% of respondent agreement), those with a reasonably strong level of agreement that is, major drivers (between 65% and 79%) and those with agreement that is, drivers (50% to 64%).

Overall, respondents identified the key factors driving of electronic commerce in their organisations in order as:

- to increase organisational efficiency (95%),
- to increase process efficiency (93%) and

- to increase service responsiveness (92 %).

The next category of major drivers in order were; to support the need for collaboration between organisations (77%), to meet a perceived business need (73 %), to meet a trading partner (government) requirement (68%), to meet increasing community expectations (66%).

Finally, the last group of electronic commerce drivers identified by respondents were: to support organisational cultural change (61%), to gain an opportunity for a service advantage (57%), to gain a perceived economic advantage (52%) and to gain a cost structure advantage (51%).

The data supports the view that the major driver for the implementation of electronic commerce in these organisations is a belief that electronic commerce will lead to improved efficiency and service. Either government or community requirements closely follow this. Finally, electronic commerce is implemented to drive organisational change and provide some cost structure or economic advantage.

6.3.3 Survey Questionnaire – Electronic Commerce Drivers Health sector and Community Services sector

The data is now examined from a Health sector then Community Services sector perspective to gain further insights into the drivers to the implementation of electronic commerce. In the Health Sector, respondents identified the key factors driving of electronic commerce in their organisations in order as;

- to increase organisational efficiency (90%),

- to increase process efficiency (89%) and
- increase service responsiveness (85%)
- to support the need for collaboration between organisations (81%) and
- to meet a trading partner (government) requirement (80%).

The next category of a major driver (with reasonable agreement) in the Health Sector was to meet a perceived business need (77 %).

Finally, the last group of electronic commerce drivers identified by respondents were: to support organisational cultural change (68%), to meet increasing community expectations (67%), to gain a perceived economic advantage (65%), to gain an opportunity for a service advantage (64%), and to gain a cost structure advantage (64%).

The data supports the view that the key drivers for the implementation of electronic commerce in these non-government organisations are; a belief that electronic commerce will lead to improved efficiency and service while supporting better collaboration between trading partners and meeting Government requirements. This is closely followed by a drive to meet a perceived business need. Finally, electronic commerce is being implemented to support organisational change, improve services and costs and meet community expectations.

The Community Services Sector identified the key factors driving of electronic commerce in their organisations in order as:

- to increase organisational efficiency (86%),

- to increase process efficiency (84%) and
- increase service responsiveness (83 %).

The next category of major drivers in order are; to support the need for collaboration between organisations (74%), to meet a perceived business need (72%), to meet a trading partner (government) requirement (71%), to meet increasing community expectations (70%).

Finally, the last group of electronic commerce drivers identified by respondents were: to support organisational cultural change (68%), to gain an opportunity for a service advantage (67%), to gain a cost structure advantage (63%) and to gain a perceived economic advantage (62%).

The data confirms the key drivers for the implementation of electronic commerce in these non-government organisations are; a belief that electronic commerce will lead to improved efficiency and increased service responsiveness. This is closely followed by collaboration between organisations and meeting both government and community requirements. Finally, electronic commerce is implemented to drive organisational change and provide some cost structure and perceived economic advantage.

6.3.4 Survey Questionnaire – Electronic Commerce Drivers

Metropolitan and Rural Areas

An examination of the data from a geographical or metropolitan area then rural area perspective reveals further insights into the drivers of the implementation of electronic commerce. The metropolitan non-government organisations identified the key factors driving of electronic commerce in their organisations in order as:

- to increase organisational efficiency (86%),
- to increase process efficiency (84%) and
- to increase service responsiveness (84%).

The next category, major drivers, in order are; to support the need for collaboration between organisations (77%), to meet a perceived business need (73%), to meet a trading partner (government) requirement (70%), to support organisational cultural change (70%), to meet increasing community expectations (69%) and to gain an opportunity for a service advantage (65%).

Finally, the last group of electronic commerce drivers identified by respondents were: to gain a cost structure advantage (61%) and to gain a perceived economic advantage (62%).

The data confirms the key drivers for the implementation of electronic commerce in these non-government organisations are; a belief that electronic commerce will lead to improved efficiency and increased service responsiveness. This is closely followed by collaboration between organisations and meeting both government and community requirements. Finally, electronic commerce is implemented to provide some cost structure and perceived economic advantage.

Similarly, rural organisations identified the key factors driving of electronic commerce in their organisations in order as:

- to increase organisational efficiency (89%),
- to increase process efficiency (87%) and

- to increase service responsiveness (84 %).

The major drivers of electronic commerce for rural non-government organisations are; to support the need for collaboration between organisations (77%), to meet a trading partner (government) requirement (75%), to meet a perceived business need (74%), to support organisational cultural change (67%), to meet increasing community expectations (69%) and to gain an opportunity for a service advantage (66%) and to gain a cost structure advantage (65%).

Finally, the last group of electronic commerce drivers identified by respondents were: and to gain a perceived economic advantage (63%).

The evidence confirms that the key driver for the implementation of electronic commerce in these non-government organisations is: electronic commerce will lead to improved efficiency and increasing levels of service responsiveness. This is followed by electronic commerce's ability to improve collaboration between organisations. The meeting of both community and government operational requirements are major drivers. Finally, electronic commerce is being implemented to provide some perceived economic advantage.

6.4 Electronic Commerce Implementation Issues

During the exploratory phase of this study, the semi-structured interviews (see Chapter 4) with six non-government organisations a number of key issues that impact on the implementation of electronic commerce were identified. In chapter 4, Table 4.5 Electronic Commerce Key issues provide a summary. These issues were used to inform the design of the questionnaire that was posted to non-government

organisations (see Chapter 5). These issues were coded as either enabler or barrier factors and tested accordingly.

The key implementation issues identified through data collection and analysis were:

(a) cooperation between trading partners, which is particularly important when supporting electronic commerce or when technical problems occur with the electronic interaction between trading partners.

(b) The need for senior management direction to drive the use of electronic commerce, without this, internal business units often would be reluctant to embrace new technology, such as electronic commerce.

(c) Funding for electronic commerce, often other organisational investments in other business projects are seen as more important.

(d) A majority of organisations declared that Government requirements should be a by-product of their business operations, if this is not the case then there is double and sometimes triple entry needed to meet government reporting requirements. Even if the data entry is via electronic commerce applications, they are often not integrated into the non-government organisations backend systems.

(e) There was limited value in the exchange of data with Government organisations. It was suggested that the value of the exchange of data was one-way, that is, data is sent to the government but nothing of any value is returned to the organisation. Aggregated data to allow better service planning was an obvious benefit to these

organisations, as it would allow a better targeting of relatively limited financial resources to the services with the most need and where it would have the greatest impact.

(f) The many data collections of Government are a key issue as non-government organisations often enter the same or similar data many times to meet the many requirements of Government. It was common for a single government Department to have many and varied data collection requirements. Non-government organisations believed that these electronic data collection requirements imposed on them are often uncoordinated and generate a large proportion of duplication.

(g) All Government Departments need to use the same encryption technology for electronic commerce, this is essential to avoid non-government organisations wasting limited funds and effort in supporting and maintaining multiple types of encryption technology. This technology is often expensive and complex to maintain.

(h) The geographic spread of the operation to support electronic commerce; this issue was identified by an organisation that has many sites throughout metropolitan and rural areas. The organisation does not have a fully centralised electronic commerce infrastructure. Therefore, there are a number of sites that require support and are expensive to connect for electronic commerce, as they require large amounts of data communications bandwidth. Connections in rural areas are relatively expensive.

(i) The drive for electronic commerce needs to be business demand led, it was noted that electronic commerce initiative need to be business led rather than IT department

led. If this does not occur then any investment and use of electronic commerce is likely to be quite modest. The benefits of electronic commerce are in enabling broader and easier business application usage.

Overall, 9 key issues were identified as affecting the implementation of electronic commerce in non-government organisations.

6.5 Barriers to Electronic Commerce

This section presents the findings of the key barriers to the implementation of electronic commerce in non-government organisations based on the data collected and analysed in Chapter 4 (semi-structured interviews) and Chapter 5 (postal survey). The section commences with general findings that examine all the data. This is followed by a re-examination of the data from the perspective of the health and community services non-government organisations and then a further re-examination of the data from a metropolitan area and rural area perspective. This approach assists a greater insight into the key barriers to the implementation of electronic commerce in these organisations.

This Section is organised in the following manner: 6.5.1 presents the semi-structured interviews of electronic commerce barriers, 6.5.2 survey questionnaire of electronic commerce barriers, 6.5.3 the survey questionnaire of electronic commerce barriers of the Health and Community Services sector, and 6.5.4 provides the survey questionnaire of electronic commerce barriers for the Metropolitan and Rural areas.

6.5.1 Semi-structured Interviews – Electronic Commerce Barriers

During the exploratory phase of this study, the semi-structured interviews (Chapter 4) with six non-government organisations a number of key barriers that impacts on the implementation of electronic commerce were identified. In chapter 4, Table 4.4 Electronic Commerce Barriers, provides a summary. These issues were used to inform the design of the questionnaire that was posted to non-government organisations. These barriers were combined with those identified in the literature then coded with and tested accordingly through the postal questionnaire (Chapter 5). The key factors that were identified as a result of the semi-structured interviews (Chapter 4) were can be divided into 3 broad categories, those with strong support and are a key barrier, those with some support and are a major barrier and those identified by only one organisation and could be considered a barrier.

The barriers identified by the interview participants were: (a) the costs associated with establishing and operating of electronic commerce was a key factor.

(b) Investment payback is long term, that is, there is a perceived lack of short-term payback when investing in electronic commerce. This suggests a general lack of understanding about the timing of any benefits realisation with electronic commerce.

(c) Electronic commerce security, the security of data particularly while in transit across the Internet and the implementation of sufficient additional security to enable electronic commerce were considered a key factor by a majority of organisations.

(d) Privacy concerns particularly relating to information while in transit across the Internet was also seen as a major barrier factor that would inhibit the implementation of electronic commerce by many organisations.

(e) Some of the interviewees identified the acquisition, development or upgrading of the existing technology to support electronic commerce as a barrier to implementation. These organisations had limited funding to support the establishment and operation of Internet based infrastructure. In addition, the costs associated with establishing and operating electronic commerce was considered high.

(f) Electronic commerce infrastructure availability was identified by some interviewees as a major barrier to implementation. Particularly, reasonable and affordable telecommunication services throughout the rural areas.

(g) Low levels of computer literacy in some organisations were identified as a barrier.

(h) There was strong agreement that a key barrier or major factor was staff training. That was having sufficient staff with the necessary skills to implement and support electronic commerce at each appropriate location in the organisation. Also training existing staff to develop new skills related to the use and operation of electronic commerce was considered a barrier.

(i) Gaining staff buy-in to use electronic commerce was a barrier as most staffs were reluctant to use the new technology without training; this was difficult in organisations with limited training budgets. In addition, it was suggested that staff

used very little information technology in their normal work operations and therefore they were more reluctant to embrace anything different or new.

(j) The lack of integration of new electronic commerce systems with existing backend systems was identified as a barrier that would dampen any enthusiasm to use electronic commerce. Without this integration, there is substantial double data entry required to use both the existing and new systems.

(k) Lack of senior management support was seen as a barrier to the implementation of electronic commerce. Without this support, investments in all the necessary technology infrastructure were not possible.

(l) Telecommunication costs were considered high by these organisations and therefore seen as a barrier that would impede electronic commerce implementation.

6.5.2 Survey Questionnaire – Electronic Commerce Barriers

The survey data supported a number of the key findings from the semi-structured interviews. The barriers to the adoption of electronic commerce in these non-government organisations can be divided into 3 broad categories. Those with a strong level of agreement that is key barriers (greater than 80% of respondent agreement), those with a reasonably strong level of agreement that is major barriers (between 65% and 79%) and those with agreement that is barriers (50% to 64%).

The overall data suggests that there were no key barriers, one major barrier and a number of more general barriers to the implementation of electronic commerce. Respondents were in reasonable agreement that the major barrier factor in their

organisations was: the many different data collection requirements of government organisations (69%). This meant multiple electronic systems were needed, each with different interfaces and all requiring slightly different training of staff. In addition, support requirements were different.

There was further agreement that electronic commerce investments are a lower organisational priority (55%) if compared to other investment opportunities in their organisations. In addition, there was reasonable agreement (54%) that electronic commerce benefits are only one-way, that is electronic commerce interactions benefit the Government but not their organisations. The government often requires the organisations it funds for services to regularly report back by electronic means. Both of these factors being barriers.

There was reasonably weak agreement about the following factors being barriers to the implementation of electronic commerce in their organisations: poor telecommunications infrastructure (49%), the geographic spread of their operations (46%), shortage of skilled staff in the market place to recruit (41%), cost of Internet infrastructure and the availability of financial resources (41%).

There was weak agreement about the following factors being barriers to the implementation of electronic commerce, the perceived lack of privacy protection of data when conducting electronic commerce (33%) and insufficient business benefits (32%).

Finally, there was very weak agreement that the availability of sufficient appropriate equipment (29%) and the lack of senior management support (21%) were barriers to the implementation of electronic commerce. It can be assumed that factors in this category of barriers with less than 50% agreement are not major barriers to the implementation of electronic commerce.

In summary non-government organisations identified 3 major barriers to the implementation of electronic commerce in their organisations;

- the many different data collection requirements of government organisations,
- electronic commerce investments are a lower organisational priority compared to other investment opportunities in their organisations and
- that electronic commerce benefits are only one-way, that is electronic commerce interactions benefit the Government but not their organisations.

6.5.3 Survey Questionnaire – Electronic Commerce Barriers Health sector and Community Services sector

The data is now examined from a Health sector then Community Services sector perspective to gain further insights into the barriers to the implementation of electronic commerce. The data suggests that respondents in the Health Sector were in strong agreement that the key barrier factor to the implementation of electronic commerce in their organisations was the many different data collection requirements of government organisations (87%).

There was further general agreement that electronic commerce benefits are only one-way, that is, for the Government (64%), poor telecommunications infrastructure (58%), and electronic commerce investments are a lower organisational priority (54%) are barriers to the implementation of electronic commerce.

The data suggests weak agreement about the following factors being barriers to the implementation of electronic commerce; the geographic spread of their operations (46%), shortage of skilled staff in the market place (44%), the perceived lack of privacy protection of data when conducting electronic commerce (44%), cost of Internet infrastructure and the availability of financial resources (42%), insufficient appropriate equipment availability (37%), insufficient business benefits (32%).

Finally, with very weak agreement was lack of senior management support (20%) as a barrier to the implementation of electronic commerce. Overall, the survey findings are consistent with the semi-structured interviews conducted with the non-government organisations.

In summary, non-government organisations identified 4 key barriers to the implementation of electronic commerce in their organisations:

- the many different data collection requirements of government organisations,
- poor telecommunications infrastructure,
- that electronic commerce benefits are only one-way, that is electronic commerce interactions benefit the Government but not their organisations and

- electronic commerce investments are a lower organisational priority in compared to other investment opportunities in their organisations.

The data confirms that respondents in the Community Services Sector were in general agreement that the barrier factors to the implementation of electronic commerce in their organisations are; the many different data collection requirements of government organisations (61%), and electronic commerce investments are a lower organisational priority if compared with other investment opportunities (55%).

There was weak agreement, about the following factors being barriers to the implementation of electronic commerce. Electronic commerce benefits are only one-way (i.e.) for Government (49 %), the geographic spread of their operations (45%), poor telecommunications infrastructure (44%), shortage of skilled staff in the market place (40%), cost of Internet infrastructure and the availability of financial resources (40%), insufficient business benefits (32%).

Finally, community services organisations confirmed very weak agreement that the perceived lack of privacy protection of data when conducting electronic commerce (28%), insufficient appropriate equipment availability (25%) and lack of senior management support (22%) were barriers to the implementation of electronic commerce.

It can be assumed that factors in this category of barriers with less than 50% agreement are not major barriers to the implementation of electronic commerce.

In summary, the community services non-government organisations identified 2 key barriers to the implementation of electronic commerce:

- the many different data collection requirements of government organisations, and
- electronic commerce investments are a lower organisational priority if compared with other investment opportunities.

6.5.4 Survey Questionnaire – Electronic Commerce Barriers

Metropolitan and Rural Areas

An examination of the data from a geographical (or metropolitan area then rural area) perspective allows further insights into the barriers to the implementation of electronic commerce. The data indicates that respondents in metropolitan areas were in reasonable agreement that the major barrier factor to the implementation of electronic commerce in their organisations was the many different data collection requirements of government organisations (66%).

There was further general agreement by these organisations that electronic commerce investments are a lower organisational priority (53%).

There were many factors with weak agreement. The following factors being barriers to the implementation of electronic commerce. Electronic commerce benefits are only one-way (i.e.) for Government (47%), poor telecommunications infrastructure (46%), shortage of skilled staff in the market place (39%), cost of Internet infrastructure and the availability of financial resources (38%), the perceived lack of privacy protection of data when conducting electronic commerce (36%), insufficient business benefits (34%), and the geographic spread of their operations (34%).

Finally, with very weak agreement were; insufficient appropriate equipment availability (28%), and lack of senior management support (22%) as barriers to the implementation of electronic commerce.

In summary the Metropolitan area non-government organisations identified 2 key barriers to the implementation of electronic commerce:

- the many different data collection requirements of government organisations, and
- electronic commerce investments are a lower organisational priority if compared with other investment opportunities.

The data highlights that the rural area respondents were in reasonable agreement that the major barrier factor to the implementation of electronic commerce in their organisations was the many different data collection requirements of government organisations (71%).

There was further agreement that electronic commerce benefits are only one-way (i.e.) for the Government (60%), electronic commerce investments are a lower organisational priority (56%), and the geographic spread of their operations (52%).

There was weak agreement the following factors were barriers to the implementation of electronic commerce: poor telecommunications infrastructure (49%), shortage of skilled staff in the market place (40%), cost of Internet infrastructure and the availability of financial resources (40%), insufficient business benefits (31%), and

the perceived lack of privacy protection of data when conducting electronic commerce (30%).

Finally, these organisations confirmed very weak agreement that insufficient appropriate equipment availability (26%) and lack of senior management support (19%) were barriers to the implementation of electronic commerce.

In summary the rural area non-government organisations identified 4 key barriers to the implementation of electronic commerce:

- the many different data collection requirements of government organisations,
- benefits are only one-way (i.e.) for the Government,
- electronic commerce investments are a lower organisational priority if compared with other investment opportunities and
- the geographic spread of their operations.

Overall, the evidence supports the view that the key barriers to the implementation of electronic commerce for non-government to government electronic commerce are:

- (a) the many different data collection requirements of government organisations,
- (b) electronic commerce investments are a lower organisational priority in compared to other investment opportunities in their organisations and
- (c) that electronic commerce benefits are only one-way, that is electronic commerce interactions benefit the Government but not their organisations.

The health sector also specifically identified

(d) poor telecommunications infrastructure as a major barrier.

(e) While rural areas additionally identified, the geographic spread of their operations were barriers to the implementation of electronic commerce for their organisations.

6.6 Enablers of Electronic Commerce

This section presents the findings of the key enablers to the implementation of electronic commerce in non-government organisations based on the data collected and analysed in Chapter 4 (semi-structured interviews) and Chapter 5 (postal survey). The section commences with general findings from all the data. This is followed by a re-examination of the data from the perspective of the health and community services non-government organisations and finally a further re-examination of the data from a metropolitan area and rural area perspective. This approach allows a greater insight into the key enablers to the implementation of electronic commerce in these non-government organisations.

This Section is organised in the following manner: Section 6.6.1 presents the semi-structured interviews of electronic commerce enablers, Section 6.6.2 depicts the survey questionnaire details of electronic commerce enablers, Section 6.6.3 provides details of the survey questionnaire findings of electronic commerce enablers in the Health and Community Services sector, and Section 6.6.4 presents the survey questionnaire findings of electronic commerce enablers in the metropolitan and rural areas.

6.6.1 Semi-structured Interviews –Electronic Commerce Enablers

During the exploratory phase of this study, the semi-structured interviews (Chapter 4) with 6 health and community services organisations a number of key enablers that impact on the implementation of electronic commerce were identified. Chapter 4, Table 4.3 Electronic Commerce Enablers provides a summary. These enablers were combined with those identified in the literature then coded with and tested accordingly through the postal questionnaire (Chapter 5). Subsequently the questionnaire was posted to 484 non-government organisations (Chapter 5). The key enabler factors that were identified as a result of the semi-structured interviews (Chapter 4) can be divided into 3 broad categories, those with strong support and are a key enabler, those with some support and are a major enabler and those identified by only one organisation and could be considered an enabler.

The electronic commerce enablers identified were: (a) Senior management support of electronic commerce is a key enabler, that is required to ensure business units seriously consider the use and potential benefits of using electronic commerce. Often its introduction will require reasonable funding and facilitate changes to work processes and practices.

(b) A justifiable business case for the implementation of electronic commerce was identified as a major enabler factor. The business case presents business management with the associated costs and the potential benefits of any proposed electronic commerce investment. The business case secures the support and necessary funding that enables the implementation of electronic commerce. Interviewees did suggest that

often it is difficult to justify any organisational investment in electronic commerce infrastructure.

(c) Telecom tariffs or available capacity was identified as a key enabler factor by a majority of these non-government organisations. The cost of using Internet service providers (ISP) and associated telecommunication tariffs is considered high. Many organisations suggested that if the costs were lower then they would look to develop and implement more electronic commerce based applications

(d) Skilled staff in the implementation and use of electronic commerce technology is essential. This is a major factor. Without this capability there can be very little implemented. Most of the organisations had limited staff with the necessary new skills to support any electronic commerce implementations. They noted that to hire additional staff with the necessary skills is expensive and they do not have the necessary budget to allow this.

(e) Sufficient funds to enable electronic commerce implementation were identified by some organisations as being an enabler factor. These organisations suggested that justifying investment in electronic commerce was problematic and even when funds are provided they are often less than the amount required.

(f) Available electronic commerce technology was seen as a key enabler factor. Many organisations reported the need to implement a number of new pieces of software and hardware to support electronic commerce. This included Internet firewalls, web servers, application servers, intrusion detection software and new performance

monitoring software. Often these items did not exist in the organisation and needed to be acquired and implemented. This enabler was linked with the next enabler.

(g) Appropriate infrastructure for electronic commerce was identified as an enabler as it was suggested that sometimes inappropriate existing technology is adapted to suit a new purpose such as implementing electronic commerce infrastructure. This has the potential to lead to major risk exposures in the areas of security and reliable operation.

(h) An organisational plan or vision identifying electronic commerce was seen as enabler. If electronic commerce was seen as an important component of the organisation's future operation then it was more likely to be supported and therefore implemented.

(i) The Information Technology (IT) function of the organisation leading the business in the use of electronic commerce technology was identified as an enabler. In organisations that were in the early adoption stages of the use of technology, it was suggested that often the business units do not see the potential benefits or applicability of new technology like electronic commerce. Therefore, if an internal unit like IT can be recognised as implementing a useful and beneficial application of the technology then the business is likely to see the benefits and be more willing to look for other opportunities for its use.

(j) Technology substitution for other organisational costs was seen as an enabler. The substitution of technology to alter and improve existing organisational cost structures was an important enabler. Often the implementation of new technology such as

electronic commerce can facilitate the re-engineering of some internal work processes and possibly alter existing internal cost structures.

(k) Full cooperation between trading partners, in this case the Government, was considered an enabler.

(l) Effective change management to enable electronic commerce was identified.

(m) Benefits realisation was identified as being necessary to ensure ongoing support for investments in electronic commerce. It was important for the organisation to recognise investments in electronic commerce projects produce the anticipated benefits identified in the business case that led to the projects approval.

(n) Recognised implementation success was identified as an enabler. It was important that both early organisational implementations of the electronic commerce and other implementations in the same business sector were seen to be of benefit and successful. Without this occurring, it would be more difficult to gain management and business unit support.

6.6.2 Survey Questionnaire – Electronic Commerce Enablers

The survey data supported a number of the key findings from the semi-structured interviews. The enablers for the adoption of electronic commerce in these organisations can be divided into 3 broad categories. Those with a strong level of agreement, that is key enablers (greater than 80% of respondent agreement), those with a reasonably strong level of agreement that is major enablers (between 65% and 79%) and those with agreement that is enablers (50% to 64%).

Overall, the respondents identified strong agreement with the key factors that enable electronic commerce in their non-government organisations as: senior management leadership and support (92%), financial resources (91%), telecommunications infrastructure (89%), security and privacy when conducting electronic commerce (87%), secure email (87%), and appropriately skilled staff (83%).

There was agreement that the major enablers are: electronic commerce technology and integration (79%), government policy and support (78%), electronic commerce benefits (72%), and Internet service provider (ISP) Infrastructure (67%).

With further agreement, that electronic commerce enabling new service models (58%) was also a factor.

In summary these organisations confirmed the following factors 6 factors as key enablers for the implementation of electronic commerce in their organisations:

- senior management leadership and support,
- financial resources,
- telecommunications infrastructure,
- security and privacy when conducting electronic commerce,
- secure email, and
- appropriately skilled staff.

With (g) electronic commerce technology and integration, (h) government policy and support, (i) electronic commerce benefits and (j) Internet service provider (ISP) Infrastructure being considered major enabling factors.

6.6.3 Survey Questionnaire – Electronic Commerce Enablers

Health sector and Community Services sector

The data is now examined from a Health sector then Community Services sector perspective to gain further insights into the enablers for the implementation of electronic commerce. The Health Sector, respondents identified the major factors that enable electronic commerce in their organisations in order as: senior management leadership and support (98%), telecommunications infrastructure (96%), secure email (94%), financial resources (92%), appropriately skilled staff (92%), electronic commerce technology and integration (87%), security and privacy when conducting electronic commerce (84%), government policy and support (84%), and electronic commerce benefits (82%).

There was agreement that enabling new service models (71%) was a major enabler and Internet service provider (ISP) Infrastructure (64%) was also a factor.

In summary these Health Sector organisations confirmed the following 10 factors as key or major enablers for the implementation of electronic commerce in their organisations:

- senior management leadership and support,
- financial resources,
- telecommunications infrastructure,

- security and privacy when conducting electronic commerce,
- secure email,
- appropriately skilled staff,
- electronic commerce technology and integration,
- government policy and support,
- electronic commerce benefits and
- electronic commerce enabling new service models.

The Community Services sector, respondents identified the major factors that enable electronic commerce in their organisations in order as: financial resources (91%), senior management. leadership and support (89%), security and privacy when conducting electronic commerce (87%),telecommunications infrastructure (85%), secure email (83%), appropriately Skilled Staff (79%), electronic commerce technology and integration (74%), government policy and support (73%), electronic commerce benefits (67%) and Internet service provider (ISP) infrastructure (67%)

There was also agreement that electronic commerce enabling New Service Models (51%) was a factor.

In summary these Community Services organisations identified the following 10 factors as key or major enablers for the implementation of electronic commerce in their organisations:

- senior management leadership and support,
- financial resources,
- telecommunications infrastructure,

- security and privacy when conducting electronic commerce,
- secure email,
- appropriately skilled staff,
- electronic commerce technology and integration,
- government policy and support,
- electronic commerce benefits and
- Internet service provider (ISP) Infrastructure.

6.6.4 Survey Questionnaire – Electronic Commerce Enablers

Metropolitan and Rural Areas

The data is now examined from a geographical or metropolitan area then rural area perspective to gain further insights into the enablers for the implementation of electronic commerce. The metropolitan area, respondents identified the major factors that enable electronic commerce in their organisations in order as: senior management leadership and support (91%), telecommunications infrastructure (93%), secure email (84%), financial resources (92%), appropriately skilled staff (83%), electronic commerce technology and integration (80%), security and privacy when conducting electronic commerce (87%), government policy and support (73%), electronic commerce benefits (66%), and Internet service provider (ISP) infrastructure (65%).

There was also agreement that electronic commerce enabling new service models (56%) was a factor.

In summary these metropolitan based non-government organisations confirmed the following 10 factors are key or major enablers for the implementation of electronic commerce in their organisations: (a) senior management leadership and support, (b) financial resources, (c) telecommunications infrastructure, (d) security and privacy when conducting electronic commerce, (e) secure email, (f) appropriately skilled staff, (g) electronic commerce technology and integration, (h) government policy and support, (i) electronic commerce benefits and (j) Internet service provider (ISP) Infrastructure.

The rural area, respondents identified the key or major factors that enable electronic commerce in their organisations in order as: senior management leadership and support (92%), telecommunications infrastructure (85%) secure email (87%), financial resources (91%), appropriately skilled staff (82%), electronic commerce technology and integration (75%), security and privacy when conducting electronic commerce (84%), government policy and support (79%), electronic commerce benefits (76%) and electronic commerce Internet service provider (ISP) infrastructure (68%).

There was further agreement that enabling new service models (57%) was a factor.

Overall the evidence suggests the following factors are key enablers for the implementation of electronic commerce in non-government organisations:

- senior management leadership and support,
- financial resources,
- telecommunications infrastructure,

- security and privacy when conducting electronic commerce,
- secure email,
- appropriately skilled staff,
- electronic commerce technology and integration,
- government policy and support,
- electronic commerce benefits and
- Internet service provider (ISP) Infrastructure.

6.7 Conclusion

After carefully analysing the data collected from the semi-structured interviews (Chapter 4) and survey questionnaires (Chapter 5) a number of key conclusions about the drivers, implementation issues, enablers and barriers to the implementation of electronic commerce in non-government organisations become clear.

The evidence supports the view that the major drivers for the implementation of electronic commerce in these non-government organisations is a belief that electronic commerce will lead to improved organisational efficiency and service. Both government and or community requirements closely follow. Finally, electronic commerce is seen as assisting organisational change and providing some cost structure or economic advantage.

The key implementation issues are focused around two main areas. The first internal organisational issues particularly around the need for senior management leadership and support in the use of electronic commerce, the appropriate allocation of funding and the importance of having the implementation of electronic commerce led by the

business and not the IT department. Secondly, there were a number of substantial issues because of the business environment these non-government organisations operate within. Consistent co-operation between trading partners (other non-government organisations, government or commercial organisations) is essential for effective electronic commerce. There is a consistent view that the benefits of the electronic exchange of data with government are one-way, that is of no benefit to the organisations providing the data. Government data requirements should be a by-product of the non-government organisations operation, not specially produced for a one-off requirement. Government electronic data collections appear to be uncoordinated this produces additional unnecessary overheads for the non-government organisation. There does not appear to be any consistently implemented whole of Government technology standards for areas such as data exchange and data encryption. This means non-government organisations need to implement different arrangements for dealing with the many and varied requests of Government. This is inefficient and costly for the non-government organisations.

Overall, the evidence supports the view that the key enabler factors for the implementation of electronic commerce in non-government organisations are: (a) senior management leadership and support, (b) financial resources, (c) telecommunications infrastructure, (d) security and privacy when conducting electronic commerce, (e) secure email, (f) appropriately skilled staff, (g) electronic commerce technology and integration, (h) government policy and support, (i) electronic commerce benefits and (j) Internet service provider (ISP) Infrastructure.

Furthermore, the evidence is consistent with the view that the key barriers to the implementation of electronic commerce for non-government to government organisation electronic commerce are: (a) the many different data collection requirements of government organisations, (b) electronic commerce investments are a lower organisational priority in compared to other investment opportunities in their organisations and (c) that electronic commerce benefits are only one-way, that is electronic commerce interactions benefit the Government but not their organisations. The health sector also specifically identified (d) poor telecommunications infrastructure as a major barrier. While rural areas additionally identified (e) the scale of our operations geographic spread were barriers to the implementation of electronic commerce for their organisations.

The following Chapter (7) presents the conclusion to this research and includes a summary of the findings, practical implications and suggestions for future research.

CHAPTER SEVEN CONCLUSION

7.1 Introduction

This research sought to identify the key factors for implementation of electronic commerce between non-government organisations and Government.

The findings of this research are important as they will allow non-government organisations to better plan and direct their limited resources to the most beneficial and most likely to succeed electronic commerce implementations. This should enable both process efficiencies and operational cost savings. Any realisable cost savings will allow more funds to be allocated to the important direct service delivery activities of these non-government organisations. In addition, these findings will allow government policy makers and planners to make effective service planning decisions to support Government policy direction.

This chapter summaries the research questions, provides an overview of the research, presents the key findings, proposes practical implications and identifies the limitations of this research. The chapter concludes with suggestions for further research and some concluding comments.

7.2 Thesis Questions

The purpose of this research was based around five specific aims and five key research questions.

The five specific aims of this research were to:

- Determine the factors that influence the adoption of electronic commerce.
(These factors are determined by the following aims.)
- Determine the key implementation issues that impact on the uptake of electronic commerce.
- Determine the key drivers for the adoption of electronic commerce, (or why are these organisations' doing this).
- Determine the major barriers that inhibit the adoption of electronic commerce (or what has to be overcome or it will impede or stop the adoption of electronic commerce in these organisations).
- Determine key enablers for the implementation of electronic commerce (or what factors that assist or make easier the implementation of electronic commerce in these organisations).

The key enablers and major barriers identified by this study will be a major contribution to the body of knowledge about electronic commerce in non-government organisations.

The research questions were:

- What are the factors that influence the adoption of electronic commerce in non-government organisations? (These factors are determined by the following sub-questions.)
- What is the key implementation issue that affects the uptake of the electronic commerce technology in these organisations?
- What are the key drivers for adoption of electronic commerce?
- What are the major barriers that inhibit the adoption of electronic commerce?

- What are key enablers for the adoption of electronic commerce?

7.3 Overview of the Research

Three research strategies were employed to gather the appropriate data to address the research aims and answer the research questions. The research was divided into the following four phases. (a) Literature Review (Chapter 2). Initially, a review of the literature was undertaken to identify the major issues, key drivers, key enablers and major barriers to the implementation of electronic commerce. This phase was used to inform the development of an initial script for the exploratory semi-structured interviews that were conducted in phase two.

(b) Face-to-face, semi-structured interviews (Chapter 4). Exploratory research was undertaken in the form of interviews with those responsible for electronic commerce in non-government organisations. Insights from the Literature review (Chapter 2) were used to inform the design of the interview scripts. Exploratory research was necessary as there was a limited amount of knowledge about electronic commerce and non-government organisations and their implementation issues. This second phase together with the literature review was used to inform the development of the postal questionnaire used in the next phase (Phase Three).

(c) Postal questionnaire (Chapter 5). This phase focused on gathering data by postal questionnaire. In this phase, government funded, non-government organisations that interact with government in an electronic commerce Government-to-business arrangement were surveyed.

Both the face-to-face semi-structured interviews (Chapter 4) and survey research in the form of a postal questionnaire (Chapter 5) were designed to capture data that was needed to inform the research aims. The data was analysed in the final phase.

(d) Data Analysis (Chapters 4, 5 and 6). This phase focused on data analysis and combining the findings from phases two and three. This phase involved data analysis of both the face-to-face semi-structured interviews (Chapter 4) and survey research in the form of a postal questionnaire (Chapter 5) to answer the research aims by using content analysis and a number of statistical tests.

7.4 Key Findings

Although this research has identified many drivers, enablers and barrier factors for the implementation of electronic commerce between non-government organisations and Government (Chapter 5), this section summaries the most important key findings. There were 7 major drivers for electronic commerce identified, 2 broad key implementation issues, 10 key enabler factors and 5 major barriers factors for implementation of electronic commerce between non-government organisations and Government.

To provide an overall context to the research the non-government organisations participating had operational budgets of \$6,500,000 (median), employing 120 staff (median) or 77 full-time equivalents (median). This suggested that these non-government organisations operate with a relatively high proportion of part-time staff; approximately 25% of the staff are not full-time. Their IT function had one staff (median), a budget of \$50,000 (median) with 40 computers (median) of which approximately 80% had Internet access. Overall, this suggests that these non-

government organisations are the size of small to medium sized organisations and they have a modest information technology capability from both a staff and budgetary perspective.

The also data suggests respondents appear to have greater electronic commerce interactions with Government organisations, if compared to their interactions with other organisations.

It was found that the major driver for the implementation of electronic commerce between non-government organisations and Government is; a belief that electronic commerce will lead to improved organisational efficiency and service. Following in order of importance were the demands of government as a trading partner of non-government organisations and community expectations or requirements.

In non-government organisations, electronic commerce is also seen as a driver that will assist organisational change, in addition for the non-government organisations that implement electronic commerce it is also seen as a way of providing some operational cost structure advantage.

This research also identified two key areas of implementation issues. Internal organisational issues; particularly the need for senior management leadership and support in the use of electronic commerce, also appropriate funding and a shared understanding of the importance of electronic commerce. In addition, it is important electronic commerce implementations are led by the business and not the IT department. Secondly, there were a number of major issues created by the business

environment where these non-government organisations operate. Consistent co-operation between trading partners (other non-government organisations, government or commercial organisations) is essential for effective electronic commerce. Co-operation is especially important for initial implementation and key for timely inter-organisational problem solving after implementation.

In addition, there is a consistent view by non-government organisations that the benefits of the electronic exchange of data with government are one-way, that is there are no benefits for the non-government organisations providing the data. Many non-government organisations believe Government data requirements should be a by-product of their organisations operation, not specially produced for one-off requirements. In addition, many Government data collections using electronic commerce appear to be uncoordinated. This imposes additional unnecessary overheads for the non-government organisation.

Importantly, there does not appear to be any consistently implemented whole of Government technology standards particularly in areas such as electronic data exchange and electronic data encryption. This means non-government organisations need to implement a variety of arrangements to deal with the many and varied data collection requirements of Government. This is inefficient and costly for the non-government organisations.

Overall, the evidence suggests that there are 10 key enabler factors for the implementation of electronic commerce between non-government organisations and Government. These are:

- Senior management leadership and support for the use of electronic commerce.
- Sufficient financial resources to support the implementation and on-going operation of electronic commerce.
- Available and affordable telecommunications services.
- Adequate security and privacy when conducting electronic commerce.
- Secure email as a number of inter-organisational communications is conducted by email.
- Appropriately skilled staff to implement and support electronic commerce.
- Appropriate electronic commerce technology and integration with existing systems.
- Government policy and support, particularly in the area of electronic data exchange and electronic data encryption. Consideration of emerging widely supported electronic commerce standards such as XML could be undertaken.
- Electronic commerce benefits as investments are made in the implementation and operation of electronic commerce in the organisation. Clearly there needs to be understood and recognised business benefits from the implementation of electronic commerce.
- and available and affordable Internet service provider (ISP) services.

The evidence also supports the view that there are five major barriers for the implementation of electronic commerce between non-government organisations and Government. These are:

- The many different data collection requirements of government organisations, often these collection systems have different user interfaces. There should be a

single user interface for government requirements. Also the many and varied requirements of government should be coordinated to reduce the duplication of effort required by non-government organisations to meet these requirements.

- Electronic commerce investments are a lower organisational priority when compared to other investment opportunities in their organisations. This is due to two key points. The first is the relatively modest budgets of non-government organisations, which means that many new worthy initiatives compete for a relatively small pool of capital funds. The second is the perceived low return from investing in electronic commerce as opposed to other competing opportunities.
- That electronic commerce benefits (particularly with data collection applications) are only one-way, that is electronic commerce benefits appear to accrue only to the Government rather than to both Government and non-government organisations. This means that electronic commerce initiatives have a perceived low value to the organisations that need to invest funds for implementation and on-going support.
- Poor telecommunications infrastructure is a major barrier. Particularly for the non-government organisations from the rural areas. Often there is limited coverage of broadband telecommunication services. This means that the implementation of electronic commerce is restricted to the low-band services that might be available. This therefore restricts the type of use and the type of applications that can be implemented.
- The scale of a non-government organisations operation if spread across a wide geographic area is a barrier to the implementation of electronic

commerce. This is of particular concern to those non-government organisations that have many operational sites scattered over a large geographic area, particularly rural areas. Often the main or central site can implement sufficient electronic commerce infrastructure to be economic. However smaller sites often have difficulties in obtaining telecommunication services, or having sufficient funds for firewalls and other special technology that is needed locally for electronic commerce use. In addition, the availability of IT support staff for smaller sites is also often a barrier to the implementation of electronic commerce.

7.5 Practical Implications of the Research

The findings of this research established 7 major drivers of electronic commerce, key implementation issues, 10 key enabler factors and 5 major barriers factors for implementation of electronic commerce between non-government organisations and Government.

These findings are based on empirical evidence and are important as they provide non-government organisations with the factors that should be considered for the implementation of electronic commerce. The findings presented here may provide some guidance for non-government organisations where there is none that has been proven through very much research.

The list of enablers presented here could provide an important early checklist for preparing a non-government organisation for the implementation of electronic commerce. This is important, as it will improve the likelihood of a successful implementation, while minimising the potential waste of organisational resources on

an unsuccessful imitative. The successful implementation of electronic commerce between non-government organisations and Government should allow process efficiencies and operational cost savings. Any realisable cost savings will allow more funds to be allocated to the important direct service delivery activities of these non-government organisations.

The list of barriers identified here will allow non-government organisations to devise strategies to overcome these potential issues before commencing implementation. On the other hand, if these issues cannot be overcome then strategies can be developed to minimise their impact on the organisation.

The identification of the enabler and barrier factors will also allow Government to improve its approach to electronic commerce with non-government organisations. Government policy makers and service planners can use both the list of enablers and barriers to inform their decisions about electronic commerce with non-government organisations. A better understanding of these factors should lead to better co-ordination and a more standardised approach to electronic commerce by Government. Government will benefit from a potentially faster implementation of their electronic service agenda, while non-government organisations will benefit from less unnecessary operational overheads introduced by electronic commerce.

7.6 Limitations of the Research

There were a number of limitations with this research, and while not detrimental to the findings never the less should be identified.

The semi-structured interviews were only conducted with six organisations although a larger sample frame could have been undertaken. It is unlikely however that many other key issues would have been identified. The interviews were conducted with medium sized organisations, as they were considered representative of typical non-government organisations. Possibly other sized non-government organisations could have been included.

The focus on of this research was specifically on the drivers, enablers, and barriers to the implementation of electronic commerce. Possibly other aspects of electronic commerce could have been included. However, these three areas were considered the key factors for the implementation of electronic commerce in non-government organisations.

The sample frame used for this research was based on the health and community services sector it could have included other sectors, although this sector has implemented a number of forms of electronic commerce and has a large proportion of non-government organisations.

In addition, the study focused on Victoria although it could have been broadened to Australia-wide Victoria was however considered a reasonable representation of non-government organisation's electronic commerce activity.

The definition of electronic commerce for this research could have been different, however the investigator ensured a wide, fair and reasonable definition consistent with general definitions in the literature and industry was employed.

The nature of these findings can only be considered scientific evidence to the extent that they can be replicated in subsequent research. It is expected that any subsequent research would replicate these findings.

7.7 Suggestions for Further Research

The findings of this research established many key factors relating to the implementation of electronic commerce between non-government organisations and Government.

These factors can be used to guide the successful implementation of electronic commerce between non-government organisations and Government.

In terms of data collection all the non-government organisations were from the health and community services sector. While there is no reason to suggest the sample frame was not representative of non-government organisations more generally, comparative research with a different sample frame of other non-government organisations could be considered.

Consideration could also be given to repeating this research with commercial rather than non-government organisations. The results could then be compared to see if the factors identified by this research are the same in a commercial setting.

7.8 Concluding Comments

The major contribution of this research was the identification of many key factors for implementation of electronic commerce between non-government and government

organisations. There were 7 major drivers identified, key implementation issues, 10 key enabler factors and 5 major barriers factors.

The findings of this research provide interesting insights into the factors for the implementation of electronic commerce between non-government and government organisations. These findings will allow non-government organisations to better plan and utilise their limited organisational resources for the most beneficial and likely to succeed electronic commerce implementations. In addition, these findings will allow government policy makers and service planners to effectively target their funding and service planning decisions to support Government policy direction. Finally, it should be kept in mind that electronic commerce drivers, enablers and barriers factors are not static and in fact will vary from organisation to organisation and time to time.

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Appendix A - List of non-government organisations surveyed

Association for Children With A Disability Inc	Mt Eliza Community Contact Inc
Ararat Community House Inc	Nadrasca Incorporated
Noweyung Centre Inc	B.A.S.S CARE LIMITED
Balwyn Welfare Association	Northern Support Services for People with Disabilities Inc.
Biala Peninsula Incorporated	Open Door (Seaford) Inc
Brighton and Districts Branch Helping Hand Association for Intellectually Disabled Inc	ParaQuad Victoria
Northern Metropolitan Migrant Resource Centre Inc	Prahran Mission
Broadmeadows Disability Services	Community Living and Respite Services Inc
St Laurence Community Services (Barwon) Inc	Northern Care and Share Inc
Brotherhood of St Laurence	The Richmond Fellowship of Victoria
Castlemaine District Community Health Centre (C.H.I.R.P) Inc	Royal Victorian Institute for the Blind
Cobram Gateway Services Inc	Goulburn Options Inc
Carinya Society	South Port Parks Parish Mission
Colac Community Development Association Inc	Span Co-Operative Ltd
UnitingCare Community Options	Scope (Vic) Ltd
Cooinda Hill Association for Intellectually Disabled Inc	St Mary's House of Welcome Ltd
Council to Homeless Persons, Pty Ltd	Society of St Vincent de Paul (Victoria)
Australian Croatian Community Services Inc	South West Access Network Inc
Disability Attendant Support Service Inc	Sunraysia Residential Services Inc
Do Care Geelong Co-Operative Ltd	WestNet (Western Education, Support and Training Network) Inc.
Doncaster Community Care and Counselling Centre Inc	Upper Murray Family Care Inc
East Burwood Centre Inc	South Eastern Disability Services Inc
Windermere Child & Family Services Inc	Victorian Aboriginal Health Service Co-operative Limited
Family Planning Victoria Inc	Villa Maria Society for The Blind
Gawith Villa Inc	WRESACARE Inc
Geelong Ethnic Communities Council Incorporated	Vantage Inc
Golden City Support Services Inc	Wavecare Incorporated
G.V. Centre Disability Services	Whittlesea District Branch of The Helping Hand Association for Persons With An Intellectual Dis Inc
Goulburn Valley Family Care Inc	Wimmera Volunteers Inc
Uniting Care Harrison Community Services	Wongabeena Association Inc
Interchange (Inner East) Association Incorporated	Woodbine Inc
Interchange Central Gippsland Inc	Mambourin Enterprises Inc
Interchange North West Inc	Yooralla Society of Victoria
Interchange Northern Region Inc	Minibah Services Inc
Interchange Outer Eastern Region Incorporated	Central Gippsland Aboriginal Health & Housing Co-operative Ltd
Karkana Support Services Inc	Geelong Adult Training & Education (Gate) Inc
Kindilan Society Inc	Autism Victoria Inc
Knoxbrooke Inc	Kirrae Health Service Inc
Kyeema Centre Inc	Cooinda-Terang Inc.
Lisa Lodge - Hayeslee	MOIRA INC.
Araluen Centre	Housing Resource and Support Service Inc
Ivanhoe-Diamond Valley Centre for Intellectually Disabled Adults Inc	Maryfields Centre Bendigo Inc
Mallee Family Care Inc	Ballarat City
MECWA Community Care Inc	Southern Way Direct Care Service Inc
Mawarra Centre Inc	Mulleraterong Residential Services Association Inc
Ararat & District Disabled Persons Association Inc	Colac Adult and Community Education Inc
Melba Support Services Inc	Fitzroy Learning Network Inc
Merri Outreach Support Service Inc	Scope Quality Learning Inc
Mill Park Community Services Group Inc	Upper Yarra Community House Inc
	Wimmera Uniting Care

South West Gippsland (Moonya) Atss Inc Marriott Support Service Ltd Motor Neurone Disease Association of Victoria Inc	E.W. Tipping Foundation Inc Moyne Health Services Chiltern and District Bush Nursing Hospital Inc
Uniting Care Wangaratta St John of God Health Care Inc City of Greater Geelong Walwa Bush Nursing Hospital Inc Yackandandah Bush Nursing Hospital Inc Sacred Heart Mission St. Kilda Inc. Western Region Health Centre Ltd Statewide Autistic Services Inc Goulburn Valley Community Health Service Inc Ararat Uniting Care Manningham Community Health Service Inc Inner South Community Health Service Inc Disability Advocacy and Information Service Incorporated Windarring Central Highlands Association for People With Disabilities Inc Golden Plains Shire Council Colac Otway Shire Council Corangamite Shire Council Moyne Shire Council Southern Grampians Shire Council Surfcoast Shire Otway Health & Community Services Shire of Alpine Baw Baw Shire Council Bayside City Council City of Boroondara Brimbank City Council Buloke Shire Council Casey City Council Central Goldfields Shire Council DeLatite Shire Council East Gippsland Shire Council Gannawarra Shire Council Glen Eira City Council The City of Greater Dandenong City of Greater Shepparton Hepburn Shire Council Hindmarsh Shire Council Hobsons Bay City Council Horsham Rural City Council City of Kingston Latrobe City Council Loddon Shire Council Macedon Ranges Shire Council City of Manningham Maribyrnong City Council City of Maroondah Mitchell Shire Council City of Monash Moonee Valley City Council Mount Alexander Shire Council Nillumbik Shire Council Northern Grampians Shire Council Pyrenees Shire Council Borough of Queenscliffe	Shire of Strathbogie Wellington Shire Council West Wimmera Shire Council City of Whitehorse Whittlesea City Council Wyndham City Council Yarra City Council Shire of Yarra Ranges Yarriambiack Shire Council Dhauwurd-Wurrung Portland & District Aboriginal Elderly Citizens Inc Shepparton Access Parent Support Network - Eastern Region Inc Caladenia Day Centre Incorporated National Ageing Research Institute Inc Turning Point Alcohol and Drug Centre Inc Wattle Human Services Inc Sokol Melbourne Inc Community Options Brokerage Service Inc Andrew Kerr Frail and Aged Care Complex Inc South Eastern Region Migrant Resource Centre Inc Brain Foundation Victoria Limited Swan Hill & District Aboriginal Co-operative Ltd. Victorian Clinical Genetics Services Limited Mental Health Foundation (Vic) P/L Mental Illness Fellowship Victoria Ballarat Community Health Centre Inc Echuca Regional Health Manangatang & District Hospital Ensay Community Health Centre Inc Nowa Nowa Community Health Centre Inc Womens Health Grampians Inc Loddon Mallee Women's Health Inc Gippsland Women's Health Service Inc Women's Health East Inc Women's Health in The North Inc Women's Health Victoria Inc Ballarat Hospice Care Inc Banksia Palliative Care Service Inc Mercy Hospice Inc DM Health Services Victorian Institute for Forensic Medicine Benalla & District Memorial Hospital Upper Hume Community Health Service Inc Monash Link Community Health Service Inc Burke and Beyond-The Community and Further Education Association Inc Peninsula Health Austin Health St Vincent's Hospital (Melbourne) Limited Colac Area Health Mallee Track Health and Community Service Wodonga Regional Health Service Alexandra District Hospital Coleraine District Health Services Heywood Rural Health

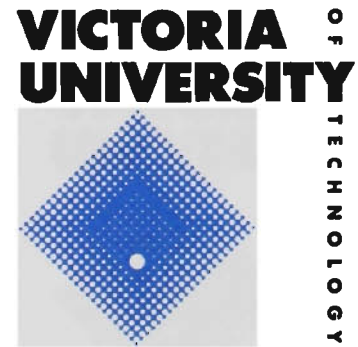
City of Stonnington	Nathalia District Hospital Stawell Regional Health
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Terang and Mortlake Health Service Timboon and District Healthcare Service Kooweerup Regional Health Service Yea & District Memorial Hospital Lyndoch Warrnambool Peter MacCallum Cancer Institute West Wimmera Health Service Koroit & District Memorial Health Services Inc Wimmera Health Care Group Beaufort & Skipton Health Service The Lady Gowrie Child Centre (Melbourne) Inc Moorfields Community For Adult Care Orana Senior Citizens Centre Inc Loddon Mallee Planned Activities Support Network Inc Stawell Intertwine Services Inc Early Education Program for Hearing Impaired Children Inc Anglicare Victoria Berwick Hospital Inc Central Bayside Community Health Services Inc Alpine Health Victoria Council On Fitness & General Health (Vicfit) Inc General Practitioners Association of Geelong Limited Health Issues Centre Inc Linc Church Services Network Darebin Inc Corio Bay Innovators Inc Leisure Networks Association Inc Knox Community Health Service Inc Stanzapark Pty Ltd ARBIAS Inc Gippsland & East Gippsland Aboriginal Co-operative Limited Ararat Rural City Council Ballan & District Soldiers Memorial Bush Nursing Hospital and Hostel Inc Bass Coast Shire Council Bellarine Community Health Inc Benalla and District Support Group for Children With Special Needs Inc Boort District Hospital Whitehorse Community Health Service Inc Dianella Community Health Inc Bulleen and Templestowe Community House Inc Casterton Memorial Hospital Latrobe Community Health Service Inc Cobaw Community Health Service Inc Cobram District Hospital North Yarra Community Health Inc Continence Foundation of Australia, Victorian Branch Inc Bentleigh Bayside Community Health Service Inc Bairnsdale Regional Health Service	South Gippsland Hospital City of Port Phillip South Port Day Links Inc St Mark's Adult Day Centre Sunbury Community Health Centre Inc Sunraysia Community Health Services Inc Sunraysia Ethnic Communities Council Inc Swan Hill Rural City Council Swan Hill District Hospital Tallangatta Health Service VALID-The Victorian Advocacy League For Individuals With Disability Inc Northeast Health Wangaratta Rural City of Wangaratta Wangaratta Meals On Wheels Committee Inc Wavlink Incorporated West Gippsland Healthcare Group Hesse Rural Health Services Women's Health West Inc Wonthaggi & District Hospital Woomelang & District Bush Nursing Centre Inc Woorinyan Inc St John of God Services Victoria Doutta Galla Community Health Service Inc VICSEG Limited Gateways Support Services Inc Mitchell Community Health Services Inc Numurkah District Health Service Ranges Community Health Service Inc Gippsland Southern Health Service Biala South East Inc Ballarat Health Services Craig Family Centre Inc Wallara Australia Ltd Banyule Community Health Service Inc Western District Employment Access Inc Plenty Valley Community Health Services Inc Balmoral Bush Nursing Centre Inc Brophy Family & Youth Services Inc Warrnambool City Council Colac-Otway Disability Accommodation Inc Colac Do-Care Inc Barwon Centre Against Sexual Assault Inc Glenelg Shire Council Karingal Inc Mulleraterong Centre Inc Community Connections (Victoria) Limited. Quantum Support Services Inc. Kilmany Family Care South Gippsland Shire Council Mallee Accommodation and Support Program Inc Campaspe Shire Council Greater Bendigo City Council Bendigo Community Health Services Incorporated Melbourne City mission Inc
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Elmhurst Bush Nursing Centre Inc	Marillac House Limited
Inner Western Region Migrant Resource Centre Inc	Multiple Sclerosis Society of Victoria
Frankston City Council	Eastern Regions Mental Health Association Inc
Gisborne and District Community Health and Hospital Board Inc	The Deaf-Blind Association
Goulburn Valley Health	Grampians Community Health Centre Inc
Regional Information and Advocacy Council Inc	Moorabool Shire Council
McIvor Health and Community Services	McCallum Disability Services Inc
Inglewood & Districts Health Service	Banyule City Council
Interchange Loddon-Mallee Region Inc	City of Darebin
City of Knox	Hume City Council
Kyabram & District Health Services	Moreland City Council
Lake Bolac Bush Nursing Centre Inc	Riding for the Disabled Association of Victoria Inc
Lakes Entrance Community Health Centre Inc	Isis Primary Care Inc
Latrobe Regional Hospital	Ovens & King Community Health Service Inc
Living and Learning for Disabled People Inc	Shire of Indigo
Lorne Community Hospital	Shire of Murrindindi
Mallacoota District Health & Support Service Inc	Wodonga Rural City Council
Mansfield District Hospital	Murrindindi Community Health Service Inc
Yallambee" Traralgon Village for The Aged Inc"	East Wimmera Health Service
Melbourne City Council	Hepburn Health Service
Melton Shire Council	Djerriwarrh Health Service
Migrant Resource Centre, North West Region Inc	St John Ambulance Australia (Victoria) Inc
Mildura Rural City Council	Australian Community Support Organisation Inc
Mornington Peninsula Shire Council	Barwon Health
Mt Alexander Hospital	Priority Care Plus Pty Ltd
Murdoch Community Services Inc	Taskmasters Inc
The Murray Valley Centre for The Intellectually Handicapped Inc	Victorian Council of Churches Inc
Orbost Regional Health	Eltham Community Health Centre Inc
Peninsula Community Health Service	West Vic Division of General Practice Inc
Portland & District Hospital	North Richmond Community Health Centre Inc
Portland and District Community Health Centre	Western District Health Service
North Eastern Region Migrant Resource Centre Inc	Work co Limited
Inner East Community Health Service Inc	Community Axis Governance Board Inc
Royal District Nursing Service	Jesuit Social Services Limited
San Remo & District Community Health Centre Inc	Ambulance Service Victoria - Metropolitan Region
Sea Lake & District Health Service Inc	Loddon Mallee Housing Services Ltd
Seymour District Memorial Hospital	wombat housing and support services inc
Deafness Foundation (Victoria)	South East Palliative Care Ltd
Eastern Access Community Health Inc.	Villa Maria Society for The Blind (Consortium)
Royal Melbourne Institute of Technology	Southern Peninsula Community Care Inc
The Bays Hospital Group Inc	Frankston/Mornington Peninsula Hospice Service Inc
PINARC Support Services Inc	AQA Victoria Ltd
Central Access Ltd	Life Planning Foundation of Australia Inc
Victorian Association of Health and Extended Care Ltd	Darebin Community Health Service Inc
Rural Ambulance Victoria	Uniting Care Ballarat Parish Mission
Rural Northwest Health	Eastern Palliative Care Association Inc.
Melbourne Catholic Family Planning Centre	Gateway Social Support Options Inc.
Robinvale District Health Services	St Luke's Anglicare
Gellibrand Residential Services Inc	South West First Aid Pty Ltd
South West Healthcare	Australian Home Care Services Pty Ltd
Central Gippsland Health Service	Ballarat Community Development Centre Co-operative Ltd
Yarrawonga District Health Service	Southern Cross Care (Vic)
Western District Health Service (Consortium)	Wintringham
Hepburn Health Services Inc (Consortium)	General Practice Divisions Victoria
Grampians Community Health Centre Inc (Consortium)	City of Kingston (Consortium)
Wimmera Uniting Care Inc (Consortium)	City of Whitehorse (Consortium)
	City of Maroondah (Consortium 2)
	City of Boroondara (Consortium)
	Moira Healthcare Alliance Inc

South West Healthcare (PCP Consortium) Peninsula Health (PCP Consortium 2)	Women's Health Goulburn North-East Inc
City of Port Phillip (Consortium) Southern Health (Consortium PCP) Moreland City Council (Consortium) Banyule City Council (Consortium) Melton Shire Council (Consortium) Moonee Valley City Council (Consortium) Mount Alexander Shire Council (Consortium) Campaspe Shire Council (Consortium) Swan Hill District Hospital (Consortium) Mildura Rural City Council (Consortium) Barwon Health (PCP Consortium) Bendigo Community Health Services Inc (Consortium) City of Darebin (PCP Consortium) Upper Hume Community Health Service Inc (PCP Consortium) Western Health Northern Health Eastern Health Bayside Health Melbourne Health Victorian Institute of Forensic Mental Health Rural City of Wangaratta (Consortium Com Conn) Latrobe Community Health Service Inc (Consortium) Central Gippsland Health Services (PCP Consortium)	South Gippsland Division of General Practice (Consortium) Bairnsdale Regional Health Service (PCP Consortium) Merriwa Industries Ltd The Goulburn Valley Hospice Care Service Inc Mildura Base Hospital Pty Ltd Berry Street Inc (Northern) Berry Street Victoria Inc (Hume) University of the Third Age Network Vic Inc Shire of Murindindi (Lower Hume Health And Community Services Forum ,PCP Consortium) Goulburn Valley Community Health Service Inc (PCP Consortium) Jewish Care (Victoria) Inc. Child Accident Prevention Foundation of Australia Shekinah Homeless Services Inc. Parent to Parent Western Network Inc. MacKillop Family Services-Western MacKillop Family Services-Barwon The Salvation Army (Victoria) Property Trust-Eastern The Salvation Army (Victoria) Property Trust-Northern CERES Inc M E/Chronic Fatigue Syndrome Society of Victoria Inc. Care and Respite Association Inc OMNI-CARE Pty Ltd CREATE (Geelong) Inc Child Migrants Trust Australia Inc

Appendix B – Survey Cover Letter



PO Box 14428
MELBOURNE CITY MC VIC 8001
Australia
Telephone: (03) 9688 4000
«Agency_Number»

«Contact_Position»
«Title» «Contact_Given_Name» «Contact_Surname»
«Agency_Name»
«Address_Line_1»
«Suburb_or_Town» «Post_Code»

Key Implementation Factors for Non-Government Organisation to Government e-commerce

The purpose of this letter is to seek your participation in this important study. This research is examining the factors that influence the adoption and implementation of e-commerce related services between non-government organisations in the health and community services sector and the Government. There has been very little research in this very important area. Your input will be extremely valuable in providing an agency in-sight about these key factors. All participants will be offered a summary of the findings once this study has concluded and has been published. This study forms part of the research for a higher degree (Doctor of Business Administration) in the Faculty of Business and Law at Victoria University of Technology.

The survey should only take about 10 to 15 minutes to complete and will seek your views on a range of topics around the use of e-commerce by your agency. The survey data will be coded in a way that your details cannot be identified. The data from the questionnaire will only be analysed by me.

A number of steps will be taken to ensure confidentiality of the information you provide. Your answers will be completely confidential. Your name or organisations name will never be placed on the questionnaire.

You can be certain that no-one will ever know how you responded to the questions. The survey results will be published in a summarised only form.

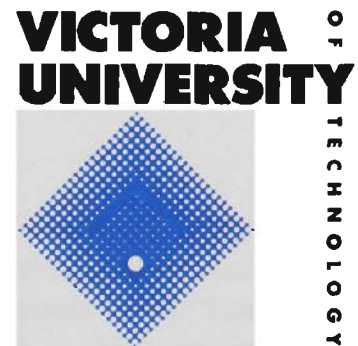
If you would like a summary of the results for yourself, simply write "copy of results" and your name and address on the back of an envelope when returning the questionnaire.

If you are not the most appropriate person to complete this survey, please ensure this is passed to the most appropriate person. Please request they complete this on behalf of your organisation and return the questionnaire as requested. A completed response within the next 10 days would be most appreciated. I plan to send some reminders within the next 15 days. I look forward to your response.

I would be happy to answer any questions you might have and may be contacted on (03) 9637 4650. Further, if during the course of this study you have any questions and wish to have these answered by someone other than myself, then these may be directed to Dr. Arthur Tatnall on 92481034 or the Secretary, Human Ethics Committee of Victoria University of Technology at the above address.

Yours Sincerely
Tony Aitkenhead

Appendix C – Survey Reminder Letter



PO Box 14428
MELBOURNE CITY MC VIC 8001
Australia
Telephone: (03) 9688 4000
«Agency_Number»

«Contact_Position»
«Title» «Contact_Given_Name» «Contact_Surname»
«Agency_Name»
«Address_Line_1»
«Suburb_or_Town» «Post_Code»

Key Implementation Factors for Non-Government Organisation to Government e-commerce

Dear «Contact_Given_Name»

A fortnight ago a questionnaire seeking your input about the factors that influence the adoption and implementation of e-commerce related services between non-government organisations in the health and community services sector and the Government was mailed to you. Your organisation was included in the population of non-government organisations in the in the health and community services sector.

If you have already completed and returned the questionnaire to me, please accept my sincere thanks. If not, I would appreciate it if you could do so today. It is extremely important that data about your organisation's views be included in the study if results are to accurately represent the sector.

If by some chance you did not receive the questionnaire, or it has been misplaced, please contact me on 9637 4650 and I will send another questionnaire immediately.

Your Sincerely

Tony Aitkenhead

Appendix D – Interview Guide

Victoria University of Technology

INFORMATION TO PARTICIPANTS:

Thank you for kindly agreeing to participate in this study. This research is examining the factors that determine the effective adoption of e-commerce and related online services between non-government and Government organisations in the health and community services sector. There has been very little research in this very important area. Your input will be extremely valuable in providing an agency in-sight about these key factors. All participants will be offered a summary of the findings once this study has concluded and has been published. This study forms part of the research for a higher degree (Doctor of Business Administration) in the Faculty of Business and Law at Victoria University of Technology.

The interview should only take about 45 minutes and will seek your views on a range of topics around the e-commerce use at your agency. I have attached the interview question guide to this letter for your information. With your agreement I would like to audiotape the interview to ensure the utmost accuracy in transcribing our discussion.

A number of steps will be taken to ensure confidentiality of the information you provide. The first step requires you completing a “consent form” (attached) that I can collect from you prior to the interview. There is no obligation to participate. If at any stage before or during the interview you feel the material covered is too sensitive, you are free to stop at any time. Your name or your organisations name will not be recorded without your consent, and interview data will be coded in a way that it cannot be identified. The data from the interview will only be analysed by myself. I may be contacted on 9637 4650 should you have any queries.

Yours Sincerely

Tony Aitkenhead

CONSENT FORM

CERTIFICATION BY SUBJECT

I,
of

certify that I am at least 17 years old* and that I am voluntarily giving my consent to participate in the study entitled: Key Implementation Factors for e-commerce between non-government and Government organisations conducted at Victoria University of Technology by Tony Aitkenhead.

I certify that the objectives of the study, together with any risks and safeguards have been fully explained to me by Tony Aitkenhead and that I freely consent to participation in this study.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:}

Any queries about your participation in this project may be directed to the researcher (Tony Aitkenhead ph. 96374650). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MCMC, Melbourne, 8001 (telephone no: 03-9688 4710).

Name _____

Organisation _____

Date _____ Time Start _____ Time End _____

Turn the tape recorder ON

Thank you for agreeing to share your views about the use of e-commerce at your agency.

Firstly, may we start off by briefly talking about your agency?

- Could you briefly describe the types of health and community services your agency offers?

What proportion of these services would be government funded?

- How many staff does your agency employ on a fulltime basis at this location? Overall?
- What is the approximate size of your agency's budget?

Do you have a specific allocation of \$ for IT? If yes, approximately how much? or % of overall agency's budget?

- How many computers does your agency have?

What proportion of these would have Internet access?

- Do you have any dedicated IT staff?

How many IT staff do you have?

e-commerce for this study includes online systems, web sites, business to business transacting, file transfer, and email exchange for business use via the internet. Can we now discuss general level of use of e-commerce at your agency?

- Has your agency implemented any form of e-commerce or on-line services (i.e.) publishing, research, transact? If so, please describe.
- Could you describe the e-commerce interactions your agency
 - has with government departments
 - has with other organisations

Could we now discuss the key drivers of the use of e-commerce at your agency. What are the key drivers for the adoption of on-line services and e-commerce between your

agency and government Departments? *(e.g. reduced costs, government direction, to improve work processes, improved efficiency, desire to move from paper based operation to electronic, complements existing service delivery channels, etc.)*

Key enablers for this study are: thosethat make possible the introduction or ongoing operation of e-commerce at your agency. Now thinking about the key enablers of e-commerce in your agency. What were/are the key enablers that have/will assist the uptake of e-commerce between your agency and government Departments? *(e.g. senior management support, justifiable business case, access to appropriate infrastructure, telecommunication tariffs ,skilled staff, sufficient funds, etc.)*

Barriers for this study are: thosethat make prevent or hinder the introduction or ongoing operation of e-commerce at your agency. Thinking about your agency's implementation and use of e-commerce. What were/are the major barriers that have/will inhibit the uptake of e-commerce between your agency and government Departments? *(e.g. technology based (e.g. need for new equipment, software, security, etc.) or organisation based (e.g. resources; financial, people, skills, work processes, business priorities or justification, etc) or environment based (e.g. telecommunications availability, telecommunications tariffs, ISP availability, etc)*

If you were to think about e-commerce at your agency what would you say were the key issues that effect e-commerce between your agency and government Departments?

In the future what types of e-commerce interaction/services would you expect between your agency and government Departments?

What do expect to be the impact of implementing e-commerce/on-line services in your agency?

- *(e.g.) organisational impact (service offerings – new or improved), staff & skills, work processes, financial, etc.))*
- *Technology impact (new equipment, integration with existing systems, security, etc.)*

Do you have any thing else to add?

Do you have any questions you would like to ask me?

Thank you for your participation in this research.
Would you like a copy of the final report? Yes No

Get _____ Consent Form
_____ Business Card
_____ Annual Report
_____ any other Organisational documents

Leave _____ Contact Details

Appendix E – Survey Questionnaire

Research Overview and Survey Instructions

This research is examining the factors that influence the adoption and implementation of electronic commerce and related services between non-government and Government organisations in the health and community services sector.

The following questionnaire should only take about 10 - 15 minutes of your time to complete. Please also answer the general questions at the end of the questionnaire. You can also express any personal comment on the last page.

This survey comprises of 6 main sections. The first Section A, seeks your views on the drivers (or why are you doing it) of electronic commerce in your organisation. Section B, covers the enablers (or the things that make possible or assist) the implementation of electronic commerce. The third, Section C seeks your views on the barriers (or the things that block or make difficult) the implementation of electronic commerce. Sections D and E, seek general organisation information and details about your role. The general organisation information is important, as there may be differences in responses between large and small organisations and metropolitan and rural organisations. Finally Section F allows you to add any comments and indicate if you wish to receive a summary copy of the findings of this study.

In completing this questionnaire, I am interested in your opinion of the issues within your organisation. Please circle each scale in the position that best describes your evaluation of the factor being judged. I need answers to all questions, please do not skip any. Check only one position on each scale. All information you provide will be kept confidential.

For Sections A, B and C please complete these by indicating your view by circling a number from one to seven, indicating your level of agreement with each statement. Possible responses range from “Strongly Disagree” Represented by “1” to “Strongly Agree” Represented by “7”.

Electronic Commerce Definition for this Study

The definition of electronic commerce for this study includes online systems, web sites, electronic business to business transacting, electronic file transfer, and email exchange for business-use via the Internet.

Thank you for your cooperation. Please return this questionnaire via the enclosed envelope.

11 Do you use electronic commerce to electronically interact with government? (1) YES (2) NO

12 What form of electronic commerce does your organisation use? (Please cross as many numbers as appropriate)

1	Electronic file transfer via the Internet	4	Web sites access
2	Electronic business to business transacting via the Internet	5	On-line systems access
3	Email exchange for business-use via the Internet.	6	Other

13 Do you use electronic commerce to electronically interact with other organisations? (1) YES (2) NO

14 What form of electronic commerce does your organisation use? (Please cross as many numbers as appropriate)

1	Electronic file transfer via the Internet	4	Web sites access
2	Electronic business to business transacting via the Internet	5	On-line systems access
3	Email exchange for business-use via the Internet.	6	Other

15 Are you planning to use electronic commerce to electronically interact with government? 1) YES (2) NO (3) N/A

16 What form of electronic commerce does your organisation plan to use? (Please cross as many as appropriate)

1	Electronic file transfer via the Internet	4	Web sites access
2	Electronic business to business transacting via the Internet	5	On-line systems access
3	Email exchange for business-use via the Internet.	6	Other

SECTION A - DRIVERS for the adoption of Electronic Commerce

This section seeks your views on the factors that are driving the implementation of electronic commerce in your organisation.

Please circle a number to indicate the extent to which you **AGREE** the following factors are a **DRIVER** of the implementation of electronic commerce in your organisation.

(d1) To meet increasing community expectations is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d2) To gain a perceived economic advantage is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d3) To increase service responsiveness is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d4) To increase organisational efficiency is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d5) To increase process efficiency is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d6) To support the need for collaboration between organisations is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d7) To gain a cost structure advantage is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d8) To gain an opportunity for a service advantage is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d9) To support an organisational cultural change - focus on customer service is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d10) To meet a trading partner (i.e. government) requirement is why we are implementing electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(d11) We are implementing electronic commerce to meet a perceived business need.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

SECTION B - ENABLERS for the adoption of Electronic Commerce

This section seeks your views on the factors that enable the implementation of electronic commerce in your organisation. Enablers are the factors that make possible or assist the implementation of Electronic commerce.

Please circle a number to indicate the extent to which you **AGREE** the following factors are an **ENABLER** of the implementation of electronic commerce in your organisation.

(e1) Internet Service Providers services are a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e2) Telecommunications infrastructure is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e3) Financial resources are a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e4) Government funding is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e5) The rise of the perceived importance of e-business is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e6) Skilled staff is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e7) Skilled staff for on-going support is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e8) Secure transactions technology is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e9) Authentication of transactions technology is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e10) Non-repudiation of electronic transactions technology is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e11) The availability of cost-effective payment engines is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e12) Senior management leadership is a key factor to enable the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e13) Ease of integration with existing systems is a key factor to permit the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e14) Consistent Government technology policy for electronic commerce is a key factor to enable non-government organisations to implement electronic commerce for interacting with Government.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e15) Easier sharing of data between organisations using electronic commerce is a key factor to enable the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e16) Using electronic commerce to share data between organisations for better service planning is a key factor to enable the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e17) Senior management support is a key factor for the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e18) Organisational commitment is a key factor to enable the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e19) A better opportunity to share data across the health and community services sector is a key factor to enable the use electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e20) Tangible benefits are a key factor to enable the use of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e21) A compelling business case is a key factor to enable the use electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e22) A good understanding of techniques to ensure data security is a key factor for the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e23) A good understanding of techniques to ensure data privacy is a key factor to enable the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e24) Electronic Commerce will allow this organisation to consider new service models (for example, monitoring patients in the home, patient or client contact channels).

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e25) Integration between backed systems and Electronic Commerce is a key factor for this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e26) New emerging data exchange standards like XML that are relatively low cost are a key factor for the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e27) A consistent Government technology standard for data exchange is a key factor to enable non-government organisations to implement electronic commerce for interacting with Government.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e28) Additional technology support from our trading partner (Government) is a key factor for the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(e29) Secure email technology is a key factor for the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

SECTION B 2 - ENABLERS for the adoption of Electronic Commerce

This section seeks your views on the factors that enable the implementation of electronic commerce in your organisation. Enablers are the factors that make possible or assist the implementation of Electronic commerce.

(B2) Please rate the importance of the following factors for enabling the implementation of electronic commerce in your organisation.

	Not at all Important		Moderately Important			Extremely Important		Don't Know
(ei2) Telecommunications infrastructure	1	2	3	4	5	6	7	X
(ei3) Financial resources	1	2	3	4	5	6	7	X
(ei4) Government funding	1	2	3	4	5	6	7	X
(ei5) Perceived importance of e-business	1	2	3	4	5	6	7	X
(ei6) Sufficient skilled staff	1	2	3	4	5	6	7	X
(ei7) Staff for on-going support	1	2	3	4	5	6	7	X
(ei8) Secure transactions technology	1	2	3	4	5	6	7	X
(ei9) Authentication of transactions technology	1	2	3	4	5	6	7	X
(ei10) Non-repudiation of electronic transactions technology	1	2	3	4	5	6	7	X
(ei11) Availability of cost-effective payment engines	1	2	3	4	5	6	7	X
(ei12) Senior management leadership	1	2	3	4	5	6	7	X
(ei13) Ease of integration with existing systems	1	2	3	4	5	6	7	X
(ei14) Consistent Government technology policy for Electronic Commerce	1	2	3	4	5	6	7	X
(ei17) Senior management support	1	2	3	4	5	6	7	X
(ei18) Organisational commitment	1	2	3	4	5	6	7	X
(ei19) Share data across the health and community services sector.	1	2	3	4	5	6	7	X
(ei20) Tangible benefits	1	2	3	4	5	6	7	X
(ei21) Compelling business case to use	1	2	3	4	5	6	7	X
(ei22) Good understanding of techniques to ensure data security	1	2	3	4	5	6	7	X
(ei23) Good understanding of techniques to ensure data privacy	1	2	3	4	5	6	7	X
(ei24) Allowing new service delivery models	1	2	3	4	5	6	7	X
(ei25) Integration between backed systems	1	2	3	4	5	6	7	X
(ei26) New emerging data exchange standards, like XML	1	2	3	4	5	6	7	X
(ei27) Consistent Government technology standards for data exchange	1	2	3	4	5	6	7	X
(ei28) Technology support from trading partner	1	2	3	4	5	6	7	X
(ei29) Secure email technology	1	2	3	4	5	6	7	X

SECTION C - BARRIERS for the adoption of Electronic Commerce

This section seeks your views on the factors that are barriers to the implementation of electronic commerce in your organisation. The barriers are the factors that block or make difficult the implementation of electronic commerce.

Please circle a number to indicate the extent to which you AGREE the following factors are a **BARRIER** of the implementation of electronic commerce in your organisation.

(b1) The cost of Internet infrastructure blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b2) Insufficient appropriate equipment availability blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b3) Shortage of skilled staff (market place) blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b4) The scale of our operations geographic spread blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b5) Inadequate capital funds block the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b6) Inadequate recurrent funds block the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b7) A low level of technology awareness by management blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b8) A low level of technology awareness by staff blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b9) Doubts about the viability of the Internet technology for business use blocks the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b10) The state of existing systems blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b11) Lack of competitive Internet Service Providers blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b12) Telecommunications tariffs blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b13) Poor telecommunications infrastructure blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b14) Lack of senior management support blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b15) Lack of technology planning blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b16) Perceived security risks block the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b17) Perceived privacy risks block the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b18) The availability of Internet infrastructure is a barrier to its implementation in this organisation

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b19) The many different data collection requirements of government organisations make the implementation of electronic commerce difficult.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b20) Developing a justifiable business case for investment in electronic commerce blocks the implementation of electronic commerce in this organisation.

Strongly Disagree			Neutral			Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b21) Investments in electronic commerce are a lower priority compared to other priority projects in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b22) Electronic interactions with government appear to only provide one-way benefits. That is benefits to Government not to this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b23) Training staff in the use of new technology is a barrier to the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b24) The perceived inadequate security of data when conducting electronic commerce is a barrier to its implementation in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b25) The perceived lack of privacy protection of data when conducting electronic commerce is a barrier to its implementation in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b26) The implementation of electronic commerce without backend system integration will require double handling of data by this organisation and is therefore a barrier to its implementation of electronic commerce.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

(b27) The perceived high risks of being unsuccessful, block the implementation of electronic commerce in this organisation.

Strongly Disagree	Neutral					Strongly Agree	Don't Know
1	2	3	4	5	6	7	X

SECTION C 2 - BARRIERS for the adoption of Electronic Commerce

This section seeks your views on the factors that are barriers to the implementation of electronic commerce in your organisation. Barriers are the factors that block or make difficult the implementation of electronic commerce.

(C2) Please rate how important it is to overcome the following barriers to allow implementation of electronic commerce in your organisation.

	Not at all Important		Moderately Important			Extremely Important		Don't Know
(bi1) Cost of Internet infrastructure	1	2	3	4	5	6	7	X
(bi2) Appropriate equipment availability	1	2	3	4	5	6	7	X
(bi3) Shortage of skilled staff (market place)	1	2	3	4	5	6	7	X
(bi7) The low level of technology awareness by management	1	2	3	4	5	6	7	X
(bi8) The low level of technology awareness by staff	1	2	3	4	5	6	7	X
(bi9) The viability of the Internet technology	1	2	3	4	5	6	7	X
(bi10) The state of existing systems	1	2	3	4	5	6	7	X
(bi11) Competitive Internet Service Providers	1	2	3	4	5	6	7	X
(bi12) Telecommunications tariffs	1	2	3	4	5	6	7	X
(bi13) Telecommunications infrastructure	1	2	3	4	5	6	7	X
(bi14) Senior management support	1	2	3	4	5	6	7	X
(bi15) The lack of technology planning in the use of electronic commerce	1	2	3	4	5	6	7	X
(bi16) Security risks when using electronic commerce	1	2	3	4	5	6	7	X
(bi17) Privacy risks when using electronic commerce	1	2	3	4	5	6	7	X
(bi18) Availability of Internet infrastructure	1	2	3	4	5	6	7	X
(bi19) The many different data collection requirements of government	1	2	3	4	5	6	7	X
(bi20) Justifiable business case	1	2	3	4	5	6	7	X
(bi21) The priority of electronic commerce compared to other priority projects.	1	2	3	4	5	6	7	X
(bi22) It only provides one-way benefits to the other party (Government).	1	2	3	4	5	6	7	X
(bi23) Training staff in the use of new technology	1	2	3	4	5	6	7	X
(bi24) Perceived lack of security protection of data	1	2	3	4	5	6	7	X
(bi25) Perceived lack of privacy protection of data	1	2	3	4	5	6	7	X
(bi26) Back-end system integration	1	2	3	4	5	6	7	X
(bi27) The perceived risk of being unsuccessful	1	2	3	4	5	6	7	X

SECTION C 3 - KEY IMPLEMENTATION ISSUES for the adoption of Electronic Commerce

Key implementation issues

Please review the table below and indicate which single factor you consider is the major category of issues that impacts most on the implementation of electronic commerce in your organisation?

Key Implementation factors for electronic commerce

k1	Resource availability	k11	Senior management support
k2	Risk management	k12	Telecommunication costs
k3	Organisational capabilities	k13	Skilled staff
k4	Investments are in other higher priority projects	k14	Consistent government technology policy
k5	Security	k15	Organisational commitment
k6	Privacy	k16	Backend system integration
k7	Cost	k17	Technology capabilities
k8	Other organisational priorities		
k9	Benefits realisation		
k10	Infrastructure availability	k20	Other

If “Other” please specify

SECTION D - Something about my Organisation

This section seeks demographic and some general information about your organisation. Please ensure you complete each question.

(SD1.) My organisation is predominantly located in (1) Metropolitan Melbourne
(2) Regional or Rural Victoria

(SD2.) My organisation predominantly delivers services in (1) Metropolitan Melbourne
(2) Regional or Rural Victoria

(SD3.) The approximate value of organisational assets and total revenue \$_____

(SD4.) Approximate total number of employees in my organisation _____

(SD5.) Full time equivalents (FTE'S) employees in my organisation_____

(SD6.) Number of IT staff in my organisation _____

(SD7.) Approximate organisational budget \$_____

(SD8.) Approximate IT budget \$_____

(SD9.) The approximate number of computers in my organisation _____

(SD10.) Per cent of computers with Internet access in my organisation _____%

- (SD11.) The three main services my organisation provides:
- (1) Aged Care
 - (2) Coordinated and Home Care
 - (3) Disability Services
 - (4) Drug Prevention and Control or Treatment and Rehabilitation
 - (5) Community Services
 - (6) Family, Youth & Individual Support Services
 - (7) Mental Health
 - (8) Primary Health
 - (9) Acute Health
 - (10) Other (please specify)

SECTION E - Something about you

This section seeks some general information about the survey respondent.

(SE1.) My Position –or my job title

Chief Executive Officer	1
Executive Director	2
Chairperson / President	3
Co-ordinator	4
Director	5
Chief Information Officer	6
Director IT	7
Manager IT	8
Other	9

Please specify _____

(SE2.) How many years have you worked for this organisation? _____

(SE3.) Total number of years with Information Systems _____

(SE4.) How many levels are you from the Chief Executive Officer
of your organisation? 1 2 3 4

(SE5.) What is the highest level of education you have completed?

Certificate	1
Diploma	2
Bachelor Degree	3
Graduate Diploma	4
Master Degree	5
Doctorate	6

SECTION F - Any additional comments

Thank you very much for your participation.

(SF1.) If you wish to add any comments or further observations, please use the space below.

Comments:

If you would like a summary of the results from this study for yourself, simply write “copy of results” and your name and address on the back of an envelope when returning the questionnaire.

Would you like a copy of the report referred to in the cover letter?
No Yes

If yes please complete a separate sheet or include your business card and either return it with this survey or if you wish to remain anonymous return it by separate post.

Thank you for your assistance.

Appendix F – Scale Reliability Co-efficient

Reliability

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	B1	(b1)	cost of Internet infrastructure is
2.	B5	(b5)	Inadequate capital funds are an EC
3.	B6	(b6)	Inadequate recurrent funds are an
4.	B11	(b11)	Lack of competitive Internet Services
5.	B12	(b12)	Telecommunications tariffs are a

		Mean	Std Dev	Cases
1.	B1	4.5226	1.8317	155.0
2.	B5	5.3871	1.5848	155.0
3.	B6	5.4258	1.5073	155.0
4.	B11	3.4129	1.5280	155.0
5.	B12	3.7935	1.7006	155.0

Covariance Matrix

	B1	B5	B6	B11	B12
B1	3.3550				
B5	1.6600	2.5115			
B6	1.4254	1.9899	2.2721		
B11	1.4646	1.0859	.8815	2.3349	
B12	1.5826	1.2298	.9326	1.8975	2.8922

Correlation Matrix

	B1	B5	B6	B11	B12
B1	1.0000				
B5	.5719	1.0000			
B6	.5163	.8330	1.0000		
B11	.5233	.4484	.3827	1.0000	
B12	.5081	.4563	.3638	.7302	1.0000

N of Cases = 155.0

Statistics for	Mean	Variance	Std Dev	N of
Scale	22.5419	41.6654	6.4549	Variables
				5

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B1	18.0194	26.0451	.6561	.4330	.8209
B5	17.1548	27.2226	.7215	.7331	.8017
B6	17.1161	28.9345	.6450	.6980	.8221
B11	19.1290	28.6716	.6514	.5682	.8204
B12	18.7484	27.4882	.6328	.5651	.8253

Reliability Coefficients 5 items
Alpha = .8490 Standardized item alpha = .8511

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. B3 (b3) Shortage of skilled staff (market)
- 2. B8 (b8) low level of technology awareness
- 3. B23 (b23) Training staff in the use of new

		Mean	Std Dev	Cases
1.	B3	4.6708	1.6837	161.0
2.	B8	4.2609	1.7195	161.0
3.	B23	4.4037	1.5426	161.0

Covariance Matrix

	B3	B8	B23
B3	2.8347		
B8	1.5302	2.9565	
B23	.9712	1.3315	2.3797

Correlation Matrix

	B3	B8	B23
B3	1.0000		
B8	.5286	1.0000	
B23	.3739	.5020	1.0000

N of Cases = 161.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	13.3354	15.8368	3.9795	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B3	8.6646	7.9993	.5253	.2951	.6658
B8	9.0745	7.1569	.6221	.3871	.5428
B23	8.9317	8.8516	.5017	.2684	.6915

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .7261 Standardized item alpha = .7253

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. B2 (b2) Insufficient appropriate equipment
- 2. B9 (b9) Doubts - viability of the Internet
- 3. B10 (b10) state of existing systems is an E
- 4. B18 (b18) The availability of Internet infrastructure

		Mean	Std Dev	Cases
1.	B2	4.6400	1.7351	150.0
2.	B9	3.6667	1.6816	150.0
3.	B10	4.3667	1.5987	150.0
4.	B18	3.7200	1.7990	150.0

Covariance Matrix

	B2	B9	B10	B18
B2	3.0105			
B9	1.0671	2.8277		
B10	1.3342	1.3043	2.5559	
B18	1.5697	1.1275	1.2577	3.2365

Correlation Matrix

	B2	B9	B10	B18
B2	1.0000			
B9	.3657	1.0000		
B10	.4810	.4851	1.0000	
B18	.5029	.3727	.4373	1.0000

N of Cases = 150.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	16.3933	26.9516	5.1915	4

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B2	11.7533	15.9991	.5722	.3447	.6918
B9	12.7267	17.1261	.5028	.2756	.7290
B10	12.0267	16.6033	.5981	.3650	.6802
B18	12.6733	15.8053	.5530	.3189	.7034

Reliability Coefficients 4 items

Alpha = .7579 Standardized item alpha = .7592

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. B7 (b7) low level of technology awareness
2. B14 (b14) Lack of senior management support
3. B15 (b15) Lack of technology planning is a

	Mean	Std Dev	Cases
1. B7	3.7688	1.7917	160.0
2. B14	3.1188	1.6190	160.0
3. B15	3.7250	1.5780	160.0

Covariance Matrix

	B7	B14	B15
B7	3.2103		
B14	1.5245	2.6210	
B15	1.2127	1.6429	2.4899

Correlation Matrix

	B7	B14	B15
B7	1.0000		
B14	.5255	1.0000	
B15	.4289	.6431	1.0000

N of Cases = 160.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables	
	10.6125	17.0816	4.1330	3	

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B7	6.8437	8.3968	.5272	.2903	.7826
B14	7.4937	8.1257	.6863	.4900	.5970
B15	6.8875	8.8803	.6073	.4250	.6867

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .7693 Standardized item alpha = .7736

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	B16	(b16)	Perceived security risks are an
2.	B24	(b24)	The perceived inadequate security

	Mean	Std Dev	Cases
1.	B16	3.9304	158.0
2.	B24	4.0253	158.0

Covariance Matrix

	B16	B24
B16	2.3837	
B24	1.6005	2.1904

Correlation Matrix

	B16	B24
B16	1.0000	
B24	.7004	1.0000

N of Cases = 158.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	7.9557	7.7751	2.7884	2

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B16	4.0253	2.1904	.7004	.4906	.
B24	3.9304	2.3837	.7004	.4906	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8234 Standardized item alpha = .8238

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. B17 (b17) Perceived privacy risks are an E
- 2. B25 (b25) The perceived lack of privacy pr

		Mean	Std Dev	Cases
1.	B17	4.0377	1.6493	159.0
2.	B25	4.1006	1.5393	159.0

Covariance Matrix

	B17	B25
B17	2.7201	
B25	1.8886	2.3696

Correlation Matrix

	B17	B25
B17	1.0000	
B25	.7439	1.0000

N of Cases = 159.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	8.1384	8.8668	2.9777	2

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B17	4.1006	2.3696	.7439	.5534	.
B25	4.0377	2.7201	.7439	.5534	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8520 Standardized item alpha = .8531

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. B20 (b20) Developing a justifiable business
- 2. B26 (b26) backend system integration is an
- 3. B27 (b27) perceived high risks of being uns

		Mean	Std Dev	Cases
1.	B20	4.1231	1.5149	130.0
2.	B26	4.6231	1.6578	130.0
3.	B27	3.7077	1.3778	130.0

Covariance Matrix

	B20	B26	B27
B20	2.2948		
B26	.9692	2.7483	
B27	.9122	1.2223	1.8984

Correlation Matrix

	B20	B26	B27
B20	1.0000		
B26	.3859	1.0000	
B27	.4371	.5351	1.0000

N of Cases = 130.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	12.4538	13.1490	3.6262	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
B20	8.3308	7.0913	.4664	.2234	.6895
B26	7.8308	6.0177	.5389	.3149	.6064
B27	8.7462	6.9816	.5863	.3488	.5553

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RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .7081 Standardized item alpha = .7128

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	BI1	(bi1)	Cost of Internet infrastructure
2.	BI11	(bi11)	Competitive Internet Service Pr
3.	BI12	(bi12)	Telecommunications tariffs

		Mean	Std Dev	Cases
1.	BI1	5.1208	1.6477	149.0
2.	BI11	4.0000	1.6725	149.0
3.	BI12	4.4765	1.7147	149.0

Covariance Matrix

	BI1	BI11	BI12
BI1	2.7150		
BI11	1.3514	2.7973	
BI12	1.4218	2.1014	2.9403

Correlation Matrix

	BI1	BI11	BI12
BI1	1.0000		
BI11	.4904	1.0000	
BI12	.5032	.7327	1.0000

N of Cases = 149.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	13.5973	18.2016	4.2663	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
BI1	8.4765	9.9403	.5338	.2852	.8456
BI11	9.5973	8.4989	.7081	.5567	.6692
BI12	9.1208	8.2150	.7168	.5641	.6580

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RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .8034 Standardized item alpha = .8026

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. BI3 (bi3) Shortage of skilled staff (mark
2. BI8 (bi8) The low level of technology aware
3. BI23 (bi23) Training staff in the use of ne

		Mean	Std Dev	Cases
1.	BI3	4.9430	1.4287	158.0
2.	BI8	4.5823	1.5236	158.0
3.	BI23	5.0823	1.4714	158.0

Covariance Matrix

	BI3	BI8	BI23
BI3	2.0413		
BI8	1.1671	2.3212	
BI23	1.1958	1.1875	2.1652

Correlation Matrix

	BI3	BI8	BI23
BI3	1.0000		
BI8	.5362	1.0000	
BI23	.5688	.5297	1.0000

N of Cases = 158.0

Statistics for	Mean	Variance	Std Dev	N of
Scale	14.6076	13.6285	3.6917	Variables
				3

Item-total Statistics

	Scale	Scale	Corrected	Squared	Alpha
	Mean	Variance	Item-	Multiple	if Item
	if Item	if Item	Total	Correlation	Deleted
	Deleted	Deleted	Correlation		
BI3	9.6646	6.8613	.6314	.4002	.6923
BI8	10.0253	6.5981	.6017	.3621	.7249
BI23	9.5253	6.6968	.6259	.3944	.6971

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .7815 Standardized item alpha = .7822

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. BI2 (bi2) Appropriate equipment availability
2. BI9 (bi9) The viability of the Internet technology
3. BI18 (bi18) Availability of Internet infrastructure
4. BI10 (bi10) The state of existing systems
5. BI26 (bi26) Back-end system integration

	Mean	Std Dev	Cases
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1.	BI2	5.2248	1.4590	129.0
2.	BI9	4.2868	1.7011	129.0
3.	BI18	4.8527	1.6158	129.0
4.	BI10	4.8915	1.5322	129.0
5.	BI26	4.9690	1.4628	129.0

Covariance Matrix

	BI2	BI9	BI18	BI10	BI26
BI2	2.1288				
BI9	1.0053	2.8937			
BI18	1.2131	1.4176	2.6109		
BI10	.7824	1.4376	.7886	2.3475	
BI26	.4836	.9855	.7532	1.1607	2.1397

Correlation Matrix

	BI2	BI9	BI18	BI10	BI26
BI2	1.0000				
BI9	.4051	1.0000			
BI18	.5145	.5157	1.0000		
BI10	.3500	.5516	.3185	1.0000	
BI26	.2266	.3961	.3187	.5179	1.0000

N of Cases = 129.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	24.2248	32.1756	5.6724	5

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
BI2	19.0000	23.0781	.4971	.3107	.7561
BI9	19.9380	19.5899	.6436	.4422	.7053
BI18	19.3721	21.2198	.5606	.3907	.7358
BI10	19.3333	21.4896	.5870	.4264	.7270
BI26	19.2558	23.2700	.4794	.3005	.7614

Reliability Coefficients 5 items

Alpha = .7791 Standardized item alpha = .7776

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	BI7	(bi7)	The low level of technology awareness
2.	BI14	(bi14)	Senior management support
3.	BI15	(bi15)	The lack of technology planning

		Mean	Std Dev	Cases
1.	BI7	4.0850	1.6381	153.0
2.	BI14	4.5948	1.7750	153.0
3.	BI15	4.4444	1.6299	153.0

Covariance Matrix

	BI7	BI14	BI15
BI7	2.6835		
BI14	1.4031	3.1505	
BI15	1.3436	1.5365	2.6564

Correlation Matrix					
	BI7	BI14	BI15		
BI7	1.0000				
BI14	.4825	1.0000			
BI15	.5032	.5311	1.0000		
N of Cases =		153.0			
Statistics for Scale	Mean 13.1242	Variance 17.0568	Std Dev 4.1300	N of Variables 3	
Item-total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
BI7	9.0392	8.8800	.5627	.3178	.6921
BI14	8.5294	8.0271	.5846	.3442	.6695
BI15	8.6797	8.6402	.6012	.3616	.6496

- R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients 3 items
 Alpha = .7533 Standardized item alpha = .7542

***** Method 2 (covariance matrix) will be used for this analysis *****

- R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

1.	BI16	(bi16)	Security risks when using elect		
2.	BI24	(bi24)	Perceived lack of privacy protection		
		Mean	Std Dev	Cases	
1.	BI16	5.0506	1.5467	158.0	
2.	BI24	4.8544	1.5673	158.0	

Covariance Matrix			
	BI16	BI24	
BI16	2.3923		
BI24	1.8673	2.4564	

Correlation Matrix			
	BI16	BI24	
BI16	1.0000		
BI24	.7703	1.0000	
N of Cases =		158.0	

Statistics for Scale					
	Mean	Variance	Std Dev	N of Variables	
	9.9051	8.5833	2.9297	2	
Item-total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
BI16	4.8544	2.4564	.7703	.5933	.
BI24	5.0506	2.3923	.7703	.5933	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8702 Standardized item alpha = .8702

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. BI17 (bi17) Privacy risks when using electronic commerce
2. BI25 (bi25) Perceived lack of privacy protection

		Mean	Std Dev	Cases
1.	BI17	5.0573	1.5821	157.0
2.	BI25	4.8599	1.5991	157.0

Covariance Matrix

	BI17	BI25
BI17	2.5031	
BI25	2.0081	2.5572

Correlation Matrix

	BI17	BI25
BI17	1.0000	
BI25	.7937	1.0000

N of Cases = 157.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	9.9172	9.0764	3.0127	2

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
BI17	4.8599	2.5572	.7937	.6300	.
BI25	5.0573	2.5031	.7937	.6300	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8850 Standardized item alpha = .8850

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. BI20 (bi20) Justifiable business case
2. BI27 (bi27) The perceived risk of being unsuccessful

		Mean	Std Dev	Cases
1.	BI20	4.6879	1.4935	141.0
2.	BI27	3.9858	1.5306	141.0

Covariance Matrix

	BI20	BI27
BI20	2.2305	
BI27	1.1527	2.3427

```

Correlation Matrix

      BI20      BI27
BI20    1.0000
BI27    .5043    1.0000

N of Cases =      141.0

Statistics for      Mean      Variance      Std Dev      N of
Scale              8.6738      6.8785      2.6227      Variables
                                   2

Item-total Statistics

      Scale      Scale      Corrected      Squared      Alpha
      Mean      Variance      Item-      Multiple      if Item
      if Item      if Item      Total      Correlation      Deleted
      Deleted

BI20      3.9858      2.3427      .5043      .2543      .
BI27      4.6879      2.2305      .5043      .2543      .

- R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   ( A L P H A )

Reliability Coefficients      2 items

Alpha =      .6703      Standardized item alpha =      .6704

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Enablers

***** Method 2 (covariance matrix) will be used for this analysis *****

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R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   ( A L P H A )

1.      E6      (e6) Skilled staff
2.      E7      (e7) Skilled staff for on-going support

      Mean      Std Dev      Cases

1.      E6      5.5597      1.3101      159.0
2.      E7      5.8616      1.1826      159.0

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Covariance Matrix

      E6      E7
E6      1.7163
E7      1.2615      1.3985

Correlation Matrix

      E6      E7
E6      1.0000
E7      .8142      1.0000

N of Cases =      159.0

Statistics for      Mean      Variance      Std Dev      N of
Scale              11.4214      5.6378      2.3744      Variables
                                   2

Item-total Statistics

      Scale      Scale      Corrected      Squared      Alpha
      Mean      Variance      Item-      Multiple      if Item
      if Item      if Item      Total      Correlation      Deleted
      Deleted

E6      11.4214      5.6378      .8142      .6704      .6704
E7      11.4214      5.6378      .8142      .6704      .6704

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E6	5.8616	1.3985	.8142	.6630	.
E7	5.5597	1.7163	.8142	.6630	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8950 Standardized item alpha = .8976

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	E8	(e8)	Secure transactions technology
2.	E9	(e9)	Authentication of transactions technology
3.	E10	(e10)	Non-repudiation of electronic transcatctions
4.	E11	(e11)	availability of cost-effective pay
5.	E13	(e13)	Ease of integration with existing
6.	E25	(e25)	Integration between backed systems

		Mean	Std Dev	Cases
1.	E8	6.1313	1.1750	99.0
2.	E9	5.7475	1.2645	99.0
3.	E10	4.9596	1.2610	99.0
4.	E11	5.0505	1.4872	99.0
5.	E13	5.7879	1.1453	99.0
6.	E25	5.1919	1.2911	99.0

Covariance Matrix					
	E8	E9	E10	E11	E13
E8	1.3805				
E9	1.2478	1.5988			
E10	.8013	.9285	1.5902		
E11	.7280	.8292	.9306	2.2117	
E13	.4975	.5173	.4403	.4700	1.3117
E25	.6072	.5694	.5589	.6535	.3370
E25					
E25	1.6669				

Correlation Matrix					
	E8	E9	E10	E11	E13
E8	1.0000				
E9	.8399	1.0000			
E10	.5408	.5823	1.0000		
E11	.4166	.4410	.4962	1.0000	
E13	.3697	.3572	.3049	.2759	1.0000
E25	.4003	.3488	.3433	.3403	.2279
E25					

RELIABILITY ANALYSIS - SCALE (ALPHA)

Correlation Matrix

E25	
E25	1.0000

N of Cases = 99.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	32.8687	29.9928	5.4766	6

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
E8	26.7374	20.8487	.7235	.7237	.7476
E9	27.1212	20.2096	.7199	.7321	.7452
E10	27.9091	21.0835	.6320	.4245	.7656
E11	27.8182	20.5584	.5356	.3089	.7911
E13	27.0808	24.1567	.4019	.1664	.8128
E25	27.6768	22.8740	.4415	.2085	.8077

Reliability Coefficients 6 items

Alpha = .8095 Standardized item alpha = .8123

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. E12 (e12) Senior management leadership
2. E17 (e17) Senior management support
3. E18 (e18) Organisational commitment

	Mean	Std Dev	Cases
1. E12	5.8917	1.1468	157.0
2. E17	6.0510	1.0488	157.0
3. E18	6.0000	1.0253	157.0

Covariance Matrix

	E12	E17	E18
E12	1.3151		
E17	.8453	1.1000	
E18	.6667	.7756	1.0513

Correlation Matrix

	E12	E17	E18
E12	1.0000		
E17	.7028	1.0000	
E18	.5670	.7213	1.0000

N of Cases = 157.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	17.9427	8.0416	2.8358	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
E12	12.0510	3.7025	.6852	.5015	.8380
E17	11.8917	3.6997	.8035	.6475	.7208
E18	11.9427	4.1057	.6942	.5274	.8235

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RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .8534 Standardized item alpha = .8555

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	E22	(e22) data security		
2.	E23	(e23) data privacy		
		Mean	Std Dev	Cases
1.	E22	5.6835	1.2573	158.0
2.	E23	5.9051	1.1826	158.0

Covariance Matrix

	E22	E23
E22	1.5807	
E23	1.1608	1.3986

Correlation Matrix

	E22	E23
E22	1.0000	
E23	.7807	1.0000

N of Cases = 158.0

Statistics for	Mean	Variance	Std Dev	N of
Scale	11.5886	5.3010	2.3024	Variables
				2

Item-total Statistics

	Scale	Scale	Corrected		
	Mean	Variance	Item-	Squared	Alpha
	if Item	if Item	Total	Multiple	if Item
	Deleted	Deleted	Correlation	Correlation	Deleted
E22	5.9051	1.3986	.7807	.6095	.
E23	5.6835	1.5807	.7807	.6095	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8759 Standardized item alpha = .8769

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- E4 (e4) Government funding
- E14 (e14) Consistent Government technology policy
- E27 (e27) Government technology standard for data exchange
- E28 (e28) technology support from our trading partner (Government)

		Mean	Std Dev	Cases
1.	E4	5.4150	1.6463	147.0
2.	E14	5.5578	1.3040	147.0
3.	E27	5.6735	1.2451	147.0
4.	E28	5.5510	1.4343	147.0

Covariance Matrix

	E4	E14	E27	E28
E4	2.7102			
E14	.8765	1.7004		
E27	.7118	1.0533	1.5502	
E28	1.2355	1.0056	1.2497	2.0573

Correlation Matrix

	E4	E14	E27	E28
E4	1.0000			
E14	.4083	1.0000		
E27	.3473	.6487	1.0000	
E28	.5232	.5376	.6998	1.0000

N of Cases = 147.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	22.1973	20.2827	4.5036	4

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
E4	16.7823	11.9249	.4967	.3077	.8323
E14	16.6395	12.7116	.6314	.4605	.7545
E27	16.5238	12.7032	.6793	.6006	.7363
E28	16.6463	11.2439	.7258	.5802	.7048

Reliability Coefficients 4 items

Alpha = .8062 Standardized item alpha = .8170

***** Method 2 (covariance matrix) will be used for this analysis *****

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

1. E15 (e15) Easier sharing of data between organisations
2. E16 (e16) share data between organisations
3. E19 (e19) share data across the health and community services
4. E5 (e5) perceived importance of e-business
5. E20 (e20) Tangible benefits
6. E21 (e21) compelling business case

		Mean	Std Dev	Cases
1.	E15	5.7171	1.1983	152.0
2.	E16	5.2961	1.3164	152.0
3.	E19	5.4408	1.2698	152.0
4.	E5	5.1513	1.3847	152.0
5.	E20	5.4737	1.1563	152.0
6.	E21	5.0789	1.3740	152.0

Covariance Matrix

	E15	E16	E19	E5	E20
E15	1.4360				
E16	1.0048	1.7330			
E19	.8606	1.0739	1.6124		
E5	.4140	.5708	.5289	1.9173	
E20	.3203	.6006	.4587	.1331	1.3371
E21	.2145	.4864	.4418	.2396	.9955

E21

E21 1.8878

Correlation Matrix

	E15	E16	E19	E5	E20
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E15	1.0000				
E16	.6370	1.0000			
E19	.5656	.6425	1.0000		
E5	.2495	.3131	.3008	1.0000	
E20	.2312	.3945	.3124	.0832	1.0000
E21	.1303	.2689	.2532	.1260	.6266

E21

RELIABILITY ANALYSIS - SCALE (ALPHA)

Correlation Matrix

E21

E21	1.0000
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N of Cases = 152.0

Statistics for	Mean	Variance	Std Dev	N of
Scale	32.1579	26.6107	5.1586	Variables
				6

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
E15	26.4408	19.5461	.5312	.4524	.7072
E16	26.8618	17.4046	.6804	.5650	.6618
E19	26.7171	18.2704	.6198	.4711	.6814
E5	27.0066	20.9205	.2979	.1249	.7716
E20	26.6842	20.2572	.4819	.4530	.7202
E21	27.0789	19.9672	.3873	.4036	.7469

Reliability Coefficients 6 items

Alpha = .7525 Standardized item alpha = .7575

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1.	EI6	(ei6)	Sufficient skilled staff
2.	EI7	(ei7)	Staff for on-going support

		Mean	Std Dev	Cases
1.	EI6	5.6918	1.2271	159.0
2.	EI7	5.8994	1.1206	159.0

Covariance Matrix

	EI6	EI7
EI6	1.5057	
EI7	1.0068	1.2556

Correlation Matrix

	EI6	EI7
EI6	1.0000	
EI7	.7322	1.0000

N of Cases = 159.0

Statistics for Scale	Mean 11.5912	Variance 4.7749	Std Dev 2.1851	N of Variables 2
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Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
EI6	5.8994	1.2556	.7322	.5361	.
EI7	5.6918	1.5057	.7322	.5361	.

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RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .8434 Standardized item alpha = .8454

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. EI8 (ei8) Secure transactions technology
- 2. EI9 (ei9) Authentication of transactions technology
- 3. EI10 (ei10) Non-repudiation of transactions technology
- 4. EI11 (ei11) Availability of cost-effective payment engines
- 5. EI13 (ei13) Ease of integration with existing
- 6. EI25 (ei25) Integration between backed system

		Mean	Std Dev	Cases
1.	EI8	6.1818	1.0820	99.0
2.	EI9	5.9293	1.0715	99.0
3.	EI10	5.4343	1.1620	99.0
4.	EI11	5.4848	1.3043	99.0
5.	EI13	6.1414	.9690	99.0
6.	EI25	5.3535	1.2315	99.0

Covariance Matrix

	EI8	EI9	EI10	EI11	EI13
EI8	1.1707				
EI9	.9518	1.1480			
EI10	.6549	.8269	1.3502		
EI11	.4926	.5346	.5832	1.7013	
EI13	.0965	.1632	.2441	.2777	.9390
EI25	.3840	.4946	.5388	.5003	.3985

	EI25
EI25	1.5166

Correlation Matrix

	EI8	EI9	EI10	EI11	EI13
EI8	1.0000				
EI9	.8210	1.0000			
EI10	.5209	.6642	1.0000		
EI11	.3490	.3826	.3848	1.0000	
EI13	.0920	.1572	.2168	.2197	1.0000
EI25	.2882	.3749	.3765	.3115	.3339

EI25

RELIABILITY ANALYSIS - SCALE (ALPHA)

Correlation Matrix

EI25

EI25 1.0000

N of Cases = 99.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	34.5253	22.1090	4.7020	6

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
EI8	28.3434	15.7788	.6002	.6789	.7228
EI9	28.5960	15.0188	.7155	.7562	.6942
EI10	29.0909	15.0631	.6315	.4793	.7126
EI11	29.0404	15.6310	.4631	.2160	.7602
EI13	28.3838	18.8103	.2807	.1361	.7924
EI25	29.1717	15.9600	.4708	.2486	.7559

Reliability Coefficients 6 items

Alpha = .7752 Standardized item alpha = .7761

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. EI12 (ei12) Senior management leadership
2. EI17 (ei17) Senior management support
3. EI18 (ei18) Organisational commitment

	Mean	Std Dev	Cases
1. EI12	6.0570	1.0298	158.0
2. EI17	6.1013	.9590	158.0
3. EI18	6.0443	.9862	158.0

Covariance Matrix

	EI12	EI17	EI18
EI12	1.0604		
EI17	.7394	.9196	
EI18	.6026	.6961	.9725

Correlation Matrix

	EI12	EI17	EI18
EI12	1.0000		
EI17	.7488	1.0000	
EI18	.5933	.7361	1.0000

N of Cases = 158.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	18.2025	7.0288	2.6512	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
--	----------------------------	--------------------------------	----------------------------------	------------------------------	-----------------------

EI12	12.1456	3.2844	.7191	.5645	.8478
EI17	12.1013	3.2381	.8319	.6921	.7443
EI18	12.1582	3.4589	.7081	.5459	.8551

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 3 items

Alpha = .8699 Standardized item alpha = .8712

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. EI22 (ei22) Good understanding of data security
- 2. EI23 (ei23) Good understanding of data privacy

		Mean	Std Dev	Cases
1.	EI22	5.7089	1.1472	158.0
2.	EI23	5.9114	1.1420	158.0

Covariance Matrix			
	EI22	EI23	
EI22	1.3160		
EI23	1.1396	1.3042	

Correlation Matrix			
	EI22	EI23	
EI22	1.0000		
EI23	.8699	1.0000	

N of Cases = 158.0				
Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	11.6203	4.8995	2.2135	2

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
EI22	5.9114	1.3042	.8699	.7567	.
EI23	5.7089	1.3160	.8699	.7567	.

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients 2 items

Alpha = .9304 Standardized item alpha = .9304

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- 1. EI4 (ei4) Government funding
- 2. EI14 (ei14) Consistent Government technology
- 3. EI27 (ei27) Consistent Government technology
- 4. EI28 (ei28) Technology support from trading partner (Government)

	Mean	Std Dev	Cases
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1.	EI4	5.6797	1.3986	153.0
2.	EI14	5.7712	1.1670	153.0
3.	EI27	5.7974	1.0964	153.0
4.	EI28	5.4183	1.4078	153.0

Covariance Matrix

	EI4	EI14	EI27	EI28
EI4	1.9560			
EI14	.8407	1.3618		
EI27	.7373	.8941	1.2021	
EI28	.7730	.8463	.9011	1.9818

Correlation Matrix

	EI4	EI14	EI27	EI28
EI4	1.0000			
EI14	.5151	1.0000		
EI27	.4808	.6988	1.0000	
EI28	.3926	.5152	.5838	1.0000

N of Cases = 153.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	22.6667	16.4868	4.0604	4

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
EI4	16.9869	9.8288	.5362	.3026	.8063
EI14	16.8954	9.9627	.7008	.5403	.7261
EI27	16.8693	10.2196	.7226	.5660	.7222
EI28	17.2484	9.4642	.5820	.3711	.7836

Reliability Coefficients 4 items

Alpha = .8075 Standardized item alpha = .8192

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

- EI5 (ei5) Perceived importance of e-business
- EI20 (ei20) Tangible benefits
- EI21 (ei21) Compelling business case
- EI19 (ei19) Share data across H&CS sector.

	Mean	Std Dev	Cases
1. EI5	4.9658	1.2562	146.0
2. EI20	5.5548	1.2093	146.0
3. EI21	5.2740	1.3053	146.0
4. EI19	5.2945	1.3192	146.0

Covariance Matrix

	EI5	EI20	EI21	EI19
EI5	1.5781			
EI20	.2881	1.4625		
EI21	.4370	.7297	1.7037	
EI19	.4377	.5251	.5601	1.7402

Correlation Matrix

	EI5	EI20	EI21	EI19
EI5	1.0000			
EI20	.1896	1.0000		
EI21	.2665	.4623	1.0000	
EI19	.2641	.3292	.3253	1.0000

N of Cases = 146.0

Statistics for	Mean	Variance	Std Dev	N of Variables
Scale	21.0890	12.4403	3.5271	4

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
EI5	16.1233	8.5364	.3168	.1075	.7378
EI20	15.5342	7.8919	.4542	.2505	.6455
EI21	15.8151	7.2828	.4902	.2686	.6153
EI19	15.7945	7.6540	.4173	.1750	.6702

Reliability Coefficients 4 items

Alpha = .7383 Standardized item alpha = .7384

Appendix G – SPSS Output

Electronic Commerce Enablers

ZECOSTS Financial resources are a key factor to permit the implementation of EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	7	4.3	4.4	4.4
	2 Neutral	7	4.3	4.4	8.8
	3 Agree	146	90.7	91.3	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZESTAFF Skilled Staff are a key factor in EC Implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	6	3.7	3.8	3.8
	2 Neutral	21	13.0	13.2	17.0
	3 Agree	132	82.0	83.0	100.0
	Total	159	98.8	100.0	
Missing	System	2	1.2		
Total		161	100.0		

ZETECH Available and appropriate technology is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	3	1.9	3.0	3.0
	2 Neutral	19	11.8	19.2	22.2
	3 Agree	77	47.8	77.8	100.0
	Total	99	61.5	100.0	
Missing	System	62	38.5		
Total		161	100.0		

ZEMNGT Senior Management support and leadership is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	1	.6	.6	.6
	2 Neutral	12	7.5	7.5	8.1
	3 Agree	147	91.3	91.9	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZEISP ISP Infrastructure is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	20	12.4	12.5	12.5
	2 Neutral	34	21.1	21.3	33.8
	3 Agree	106	65.8	66.3	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZETEL Telecom Infrastructure is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	3	1.9	1.9	1.9
	2 Neutral	15	9.3	9.4	11.3
	3 Agree	142	88.2	88.8	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZESEC Data Security and Data Privacy is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	4	2.5	2.5	2.5
	2 Neutral	18	11.2	11.3	13.8
	3 Agree	138	85.7	86.3	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZESMAIL Ensuring Data Privacy is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	10	6.2	6.2	6.2
	2 Neutral	12	7.5	7.5	13.7
	3 Agree	139	86.3	86.3	100.0
	Total	161	100.0	100.0	

ZEGOVT Government Policy and Support is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	6	3.7	3.8	3.8
	2 Neutral	31	19.3	19.6	23.4
	3 Agree	121	75.2	76.6	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZE4 Government Funding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	24	14.9	14.9	14.9
	2 Neutral	15	9.3	9.3	24.2
	3 Agree	122	75.8	75.8	100.0
	Total	161	100.0	100.0	

ZE14 Government Technology Policy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	11	6.8	6.9	6.9
	2 Neutral	23	14.3	14.4	21.3
	3 Agree	126	78.3	78.8	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZE27 Government Standard for Data Exchange

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	8	5.0	5.1	5.1
	2 Neutral	26	16.1	16.6	21.7
	3 Agree	123	76.4	78.3	100.0
	Total	157	97.5	100.0	
Missing	System	4	2.5		
Total		161	100.0		

ZE28 Technology Support from Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	17	10.6	10.8	10.8
	2 Neutral	22	13.7	13.9	24.7
	3 Agree	119	73.9	75.3	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZEBENE Realisation of Business Benefits is a key factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	2	1.2	1.3	1.3
	2 Neutral	43	26.7	27.4	28.7
	3 Agree	112	69.6	71.3	100.0
	Total	157	97.5	100.0	
Missing	System	4	2.5		
Total		161	100.0		

ZENEWSEV EC will Enable - New service opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	24	14.9	15.4	15.4
	2 Neutral	42	26.1	26.9	42.3
	3 Agree	90	55.9	57.7	100.0
	Total	156	96.9	100.0	
Missing	System	5	3.1		
Total		161	100.0		

ZIECOSTS Sufficient financial resources are Important for EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	3	1.9	1.9	1.9
	2 reasonably important	9	5.6	5.6	7.5
	3 very important	148	91.9	92.5	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZIESTAFF Skilled Staff are Important

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	4	2.5	2.5	2.5
	2 reasonably important	23	14.3	14.5	17.0
	3 very important	132	82.0	83.0	100.0
	Total	159	98.8	100.0	
Missing	System	2	1.2		
Total		161	100.0		

ZIETECH Available and appropriate technology is Important

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	1	.6	1.0	1.0
	2 reasonably important	11	6.8	11.1	12.1
	3 very important	87	54.0	87.9	100.0
	Total	99	61.5	100.0	
Missing	System	62	38.5		
Total		161	100.0		

ZIEMNGT Senior Management support and leadership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	1	.6	.6	.6
	2 reasonably important	11	6.8	7.0	7.6
	3 very important	146	90.7	92.4	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIEISPTL Importance of ISP and Telecoms Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	3	1.9	1.9	1.9
	2 reasonably important	12	7.5	7.6	9.5
	3 very important	143	88.8	90.5	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIESECPV Importance of Security Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	4	2.5	2.5	2.5
	2 reasonably important	17	10.6	10.8	13.3
	3 very important	137	85.1	86.7	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIESMAIL Importance of Privacy Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	6	3.7	3.8	3.8
	2 reasonably important	8	5.0	5.1	8.9
	3 very important	144	89.4	91.1	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIEGOVT Importance of Government Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	3	1.9	1.9	1.9
	2 reasonably important	24	14.9	15.6	17.5
	3 very important	127	78.9	82.5	100.0
	Total	154	95.7	100.0	
Missing	System	7	4.3		
Total		161	100.0		

ZIE4 Importance Government Funding Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	11	6.8	6.9	6.9
	2 reasonably important	21	13.0	13.2	20.1
	3 very important	127	78.9	79.9	100.0
	Total	159	98.8	100.0	
Missing	System	2	1.2		
Total		161	100.0		

ZIE14 Importance Government Technology Policy Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	6	3.7	3.8	3.8
	2 reasonably important	14	8.7	8.9	12.7
	3 very important	138	85.7	87.3	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIE27 Importance Government Standard for Data Exchange Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	4	2.5	2.6	2.6
	2 reasonably important	16	9.9	10.3	12.9
	3 very important	135	83.9	87.1	100.0
	Total	155	96.3	100.0	
Missing	System	6	3.7		
Total		161	100.0		

ZIE28 Importance Technology support from Government Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	17	10.6	11.0	11.0
	2 reasonably important	17	10.6	11.0	21.9
	3 very important	121	75.2	78.1	100.0
	Total	155	96.3	100.0	
Missing	System	6	3.7		
Total		161	100.0		

ZIEBENE Importance of Business Benefits Enabler

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	2	1.2	1.4	1.4
	2 reasonably important	46	28.6	31.1	32.4
	3 very important	100	62.1	67.6	100.0
	Total	148	91.9	100.0	
Missing	System	13	8.1		
Total		161	100.0		

ZIENEWSV Importance Enabler - New service opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	14	8.7	9.0	9.0
	2 reasonably important	25	15.5	16.1	25.2
	3 very important	116	72.0	74.8	100.0
	Total	155	96.3	100.0	
Missing	System	6	3.7		
Total		161	100.0		

Electronic Commerce Barriers

ZBCOSTS Cost of Infrastructure & lack of funds block EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	19	11.8	12.3	12.3
	2 Neutral	73	45.3	47.1	59.4
	3 Agree	63	39.1	40.6	100.0
	Total	155	96.3	100.0	
Missing	System	6	3.7		
Total		161	100.0		

ZBSTAFF Shortage of appropriatly skilled staff blocks EC Implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	27	16.8	16.8	16.8
	2 Neutral	68	42.2	42.2	59.0
	3 Agree	66	41.0	41.0	100.0
	Total	161	100.0	100.0	

ZBTECH Perceptions about the Viability of Technology blocks EC Implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	27	16.8	18.0	18.0
	2 Neutral	80	49.7	53.3	71.3
	3 Agree	43	26.7	28.7	100.0
	Total	150	93.2	100.0	
Missing	System	11	6.8		
Total		161	100.0		

ZBMNGT Lack of Senior Management support blocks EC implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	68	42.2	42.5	42.5
	2 Neutral	58	36.0	36.3	78.8
	3 Agree	34	21.1	21.3	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZBISPTEL Costs and availability of ISP and Telecom Infrastructure blocks EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	48	29.8	30.4	30.4
	2 Neutral	33	20.5	20.9	51.3
	3 Agree	77	47.8	48.7	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZBPRIV Perceived lack of Privacy Protection blocks EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	46	28.6	28.9	28.9
	2 Neutral	60	37.3	37.7	66.7
	3 Agree	53	32.9	33.3	100.0
	Total	159	98.8	100.0	
Missing	System	2	1.2		
Total		161	100.0		

ZBGOVDAT Many Government data collect requ. blocks EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	28	17.4	18.1	18.1
	2 Neutral	20	12.4	12.9	31.0
	3 Agree	107	66.5	69.0	100.0
	Total	155	96.3	100.0	
Missing	System	6	3.7		
Total		161	100.0		

ZBGOVONE One-way benefits (Government) blocks EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	38	23.6	23.9	23.9
	2 Neutral	35	21.7	22.0	45.9
	3 Agree	86	53.4	54.1	100.0
	Total	159	98.8	100.0	
Missing	System	2	1.2		
Total		161	100.0		

ZBGEO Geographic spread of this organisation blocks EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	64	39.8	40.0	40.0
	2 Neutral	23	14.3	14.4	54.4
	3 Agree	73	45.3	45.6	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZBINVEST Barrier - Investment in EC are a Lower Priority than other decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Disagree	41	25.5	25.6	25.6
	2 Neutral	31	19.3	19.4	45.0
	3 Agree	88	54.7	55.0	100.0
	Total	160	99.4	100.0	
Missing	System	1	.6		
Total		161	100.0		

ZIBCOSTS Inadequate funds are important for Implementation of EC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	28	17.4	18.8	18.8
	2 reasonably important	50	31.1	33.6	52.3
	3 very important	71	44.1	47.7	100.0
	Total	149	92.5	100.0	
Missing	System	12	7.5		
Total		161	100.0		

ZIBSTAFF Shortage of appropriate staff importance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	18	11.2	11.4	11.4
	2 reasonably important	51	31.7	32.3	43.7
	3 very important	89	55.3	56.3	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIBTECH Perceptions about the Viability of Technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	13	8.1	10.1	10.1
	2 reasonably important	45	28.0	34.9	45.0
	3 very important	71	44.1	55.0	100.0
	Total	129	80.1	100.0	
Missing	System	32	19.9		
Total		161	100.0		

ZIBMNGT Lack of Senior Management support Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	32	19.9	20.9	20.9
	2 reasonably important	54	33.5	35.3	56.2
	3 very important	67	41.6	43.8	100.0
	Total	153	95.0	100.0	
Missing	System	8	5.0		
Total		161	100.0		

ZIBISPTL Importance of ISP and Telecoms Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	30	18.6	19.9	19.9
	2 reasonably important	19	11.8	12.6	32.5
	3 very important	102	63.4	67.5	100.0
	Total	151	93.8	100.0	
Missing	System	10	6.2		
Total		161	100.0		

ZIBSEC Importance of Security Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	22	13.7	13.9	13.9
	2 reasonably important	44	27.3	27.8	41.8
	3 very important	92	57.1	58.2	100.0
	Total	158	98.1	100.0	
Missing	System	3	1.9		
Total		161	100.0		

ZIBPRIV Importance of Privacy Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	21	13.0	13.4	13.4
	2 reasonably important	47	29.2	29.9	43.3
	3 very important	89	55.3	56.7	100.0
	Total	157	97.5	100.0	
Missing	System	4	2.5		
Total		161	100.0		

ZIBGOVDT Importance - Many data collections Government as a Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	18	11.2	11.5	11.5
	2 reasonably important	21	13.0	13.4	24.8
	3 very important	118	73.3	75.2	100.0
	Total	157	97.5	100.0	
Missing	System	4	2.5		
Total		161	100.0		

ZIBGOVOB Importance - one-way benefits as a Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	34	21.1	22.5	22.5
	2 reasonably important	31	19.3	20.5	43.0
	3 very important	86	53.4	57.0	100.0
	Total	151	93.8	100.0	
Missing	System	10	6.2		
Total		161	100.0		

ZIBBENE Importance Insufficient business benefits Barrier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	29	18.0	20.4	20.4
	2 reasonably important	55	34.2	38.7	59.2
	3 very important	58	36.0	40.8	100.0
	Total	142	88.2	100.0	
Missing	System	19	11.8		
Total		161	100.0		

ZIBINVST Importance Barrier - Investment in EC are a Lower Priority than other Decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 not important	17	10.6	10.9	10.9
	2 reasonably important	33	20.5	21.2	32.1
	3 very important	106	65.8	67.9	100.0
	Total	156	96.9	100.0	
Missing	System	5	3.1		
Total		161	100.0		