

**GOVERNMENT ELECTRONIC AND MOBILE SERVICE
DELIVERY: A SUCCESS FACTORS MODEL**

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ABSTRACT OF THE THESIS

GOVERNMENT ELECTRONIC AND MOBILE SERVICE DELIVERY: A SUCCESS FACTORS MODEL

This study investigated the phenomenon of government electronic and mobile service delivery including mobile government service mechanisms. It is an area of management and information systems yet to be fully developed in many parts of the world with considerable variation in success and experience.

The study concentrates on a gap in knowledge relating to the significant areas of influence which inhibit or promote successful government electronic and mobile service delivery and therefore the overall success of government projects and initiatives. In addressing the knowledge gap, this study delivers a success factors model which identifies, and categorises those significant areas and factors which directly impact on the success of government service delivery initiatives.

It achieves the success factors model in five phases. An extensive review of contemporary literature in the area, the proposing of an initial model of government electronic and unified mobile service delivery as derived from the literature review. An in-depth case study of the Victorian government's experience and minor case studies of Finland and Singapore relevant to the topic, and independent comment from the World Bank. A verification of the model from the data collected; an analysis of the data and conclusions of the study.

Results from this study indicated there are six major areas of significance in the successful delivery of government services by electronic and mobile media. Within these six areas of significance there are domains of influence with success factors and inhibitors to the successful service delivery using these forms of technology. Also it identifies the relationships between success factors, inhibitors and areas of significance, which affect the overall success of projects and initiatives.

Recommendations for further research in this field include: change management of government technology environments, education for mobile-government users; redefining information silos within government to delivery unified mobile government and securing government service delivery by delivery platform.

STUDENT DECLARATION

I, Stuart McMillan, declare that the PhD thesis entitled government electronic and mobile service delivery: a success factors model is no more than 100,000 words in length, inclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signature: _____ Date: _____

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LIST OF ABBREVIATIONS

3/11	Lower grade emergency telephone service (United States of America)
9/11	Higher grade emergency telephone service (United States of America)
7/24	7 days per week, 24 hours per day
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
ADSL	Asymmetric Digital Subscriber Line
ANAO	Australian National Audit Office
AOS	Area Of Significance
APSA	American Society for Public Administration
ATM	Automated Teller Machines
ATM (1)	Asynchronous Transfer Mode
CFA	Country Fire Authority
CIO	Chief Information Officer
CIRCIT	Centre for International Research on Communication and Information Technologies
CSCP	Civil Service Computerisation Program (Singapore)
CTO	Chief Technology Officer
DB2	Data Base 2 (Older Mainframe database program)
DDI	Digital Data Interface
DHS	Department of Health Services (Victorian Government)
DOI	Department of Infrastructure (Victorian Government)
DPC	Department of Premier and Cabinet (Victorian Government)

DSE	Department of Sustainability and Environment (Victorian Govt)
ECSD	Electronic Commerce Service Delivery
EDI	Electronic Data Interchange
EFT	Electronic Funds Transfer
EFTPOS	EFT at Point of Sale
EID	Electronic Identity
EU	European Union
G2B	Government to Business
G2C	Government to Communities
G2G	Government to Government
G2J	Government to Jurisdiction
GEIN	Geosynchronous Emergency Information Network
GEMSD	Government Electronic Mobile Service Delivery
GESD	Government Electronic Service Delivery
GAID	Global Alliance for ICT Development
GNI	Gross National Income
GOL	Government on Line
GPKI	Government Public Key Infrastructure
HRM	Human Resource Management
HUIT	Household Use of Information Technology
ICT	Information and Communication Technologies
ICT4D	Information and Communication Technologies for Development
IDA	Infocomm Development Authority (Singapore)
IP	Internetworking Protocol
IS	Information Systems

ISB	Information Services Branch
ISP	Internet Service Provider
ISR	Information Systems Research
ISDN	Integrated Services Digital Network
ISO9000	International Standards Organisation 9000 standard
IT	Information Technology
JUNA	Julkisen verkkoasioinnin kehittämishanke
MMV	Multimedia Victoria (Victorian Government)
MoU	Memorandum of Understanding
MSD	Mobile Service Delivery
MRI	Magnetic Resonance Imaging
NITCPIDM	New Information Technology and Citizen's Possibilities to Influence Decision Making
NOIE	National Office of the Information Economy (Australia)
NPM	New Public Management
OCIO	Office of the Chief Information Officer (Victorian Government)
OCTO	Office of the Chief Technology Officer (Victorian Government)
PS799	security audit system
PDA	Personal Digital Assistant
PDF	Portable Document Format
QA	Quality Assurance
QANTAS	Queensland And Northern Territory Air Service
PKI	Public Key Infrastructure
POTS	Plain Old Telephone System
PPP	Public Private Partnership
RDNS	Royal District Nursing Service

ROI	Return On Investment
RTF	Request for Tender
SES	State Emergency Services
SLA	Service Level Agreement
SMS	Short Messaging System
SOE	Standard Operating Environment
SPEAR	Streamlined Planning through Electronic Applications and Referrals
SWHN	South West Health Network
UNPAN	United Nations Online Network in Public Administration & Finance
URL	Uniform Resource Locator
VCW	Virtual Central Warehousing
VERS	Victorian Electronic Record System
VOTS	Victorian Office Telephony System
VUT	Victoria University of Technology
W3C	World Wide Web Consortium
WiFi	The popular term for the 802.11b wireless Ethernet standard
WiMax	The popular term for the 802.16 group of wireless Ethernet standards
WAP	Wireless Application Protocol
WiVoIP	Wireless Voice over Internetworking Protocol

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GLOSSARY

Accuracy: - The extent to which an evaluation is truthful or valid in what it says about a program, project, or material.

Anonymity: - Evaluator action to ensure that the identity of subjects cannot be ascertained during the course of a study, in study reports, or in any other way.

Attitude: - A person's mental set toward another person, thing, or state.

Bias: - A consistent alignment with one point of view.

Case study: - An intensive, detailed description and analysis of a single project, program, or instructional material in the context of its environment.

Context (of an evaluation): - The combination of factors accompanying the study that may have influenced its results, including geographic location, timing, political and social climate, economic conditions, and other relevant professional activities in progress at the same time.

Criterion, criteria: - A criterion (variable) is whatever is used to measure a successful or unsuccessful outcome, e.g., grade point average.

E-Government: - Government by electronic means.

Internet: - A world-wide electronic linking of computers. The Internet provides services such as electronic mail (e-mail), access to information stored on the linked computers and online banking, amongst many others.

Intranet:-Intranet An Internet-style service where access is restricted to the confines of the Organisation. In the context of this report, the 'Organisation' is an individual agency, as referred to in the survey.

Data reduction: - Process of selecting, focusing, simplifying, abstracting, and transforming data collected in written field notes or transcriptions.

Descriptive data: - Information and findings expressed in words, unlike statistical data, which are expressed in numbers.

Extranet: - An Extranet is a hybrid of an Internet and an Intranet.

e-Commerce: - e-Commerce or electronic commerce may be defined as two or more entities' (individuals or organisations) conducting business using electronic methods and procedures.

Electronic Service Delivery (ESD) - This term describes the use of electronic technology to deliver services. The essential characteristic of ESD is the way client and service provider (agency) are linked electronically. Examples include the Internet, Electronic Funds Transfer (EFT), smart cards, EFT Point Of Sale (EFTPOS) and electronic kiosks.

Smart cards - Mainly characterised by placing an integrated circuit on to a credit card sized medium that can store and process much more information than is available on a normal credit card.

Electronic Cash: - Like smart cards, electronic-cash systems envisage the ability to download money on to a card sized medium. As with phone cards, which are in common use in Australia, the electronic cash card can record the 'spending' of cash and reduce the balance on the card progressively.

Electronic Kiosk: - An electronic kiosk is a computer terminal, generally available publicly, which allows the user to conduct business electronically.

Field notes: - Observer's detailed description of what has been observed.

Hypothesis testing: - The standard model of the classical approach to scientific research in which a hypothesis is formulated before the experiment to test its truth.

GNI - Gross National Income

ICT4D - Information and Communication Technologies for Development, is a general term referring to the application of Information and Communication Technologies (ICTs) within the field of socio-economic development. ICTs can be applied either in the direct sense, where their use directly benefits the disadvantaged population in some manner, or in an indirect sense, where the ICTs assist aid organizations or non-governmental organizations or governments in order to improve socio-economic conditions. In many impoverished regions of the world, legislative and political measures are required to facilitate or enable application of ICTs, especially with respect to monopolistic communications structures and censorship laws.

In-depth interview: - A guided conversation between a skilled interviewer and an interviewee that seeks to maximize opportunities for the expression of a respondent's

feelings and ideas through the use of open-ended questions and a loosely structured interview guide.

Informed consent: - Agreement by the participants in an evaluation to the use, in specified ways for stated purposes, of their names and/or confidential information they supplied.

Internetworking - The process of connecting multiple networks, especially the interconnection of multiple LANs over a wide-area topology by the use of bridges and routers

Instrument: - An assessment device (test, questionnaire, protocol, etc.) adopted, adapted, or constructed for the purpose of the evaluation.

LAN – A common abbreviation for Local Area Network, a network that provides services to all users within close geographic proximity.

MAN - Common abbreviation for Metropolitan Area Network

Metropolitan Area Network - A network that covers a geographic area larger than a LAN but smaller than a WAN. A MAN will usually be contained within a LATA and served by a single LEC.

Matrix:-An arrangement of rows and columns used to display multi-dimensional information.

M Government: - A common abbreviation for Mobile government

Mobile government: - Access to government services via wireless connections such as mobile telephone, wireless LAN, MAN and WAN, Microwave and infra-red connections and radio frequency access.

Population: - All persons in a particular group.

PKI/PKT -Public Key Infrastructure/Technology uses technology to encrypt, decrypt and verify data.

Qualitative evaluation: - The approach to evaluation that is primarily descriptive and interpretative.

Quantitative evaluation: - The approach to evaluation involving the use of numerical measurement and data analysis based on statistical methods.

Recommendations: - Suggestions for specific actions derived from analytic approaches to the program components.

Return on investment: - A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio.

The return on investment formula:

$$\text{ROI} = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}}$$

Return on investment is a very popular metric because of its versatility and simplicity. That is, if an investment does not have a positive ROI, or if there are other opportunities with a higher ROI, then the investment should be not be undertaken.

Secondary data analysis: - A reanalysis of data using the same or other appropriate procedures to verify the accuracy of the results of the initial analysis or for answering different questions.

Stakeholder: - A stakeholder is one who has credibility, power, or other capital invested in a project and thus can be held to be to some degree at risk with it.

Structured interview: - An interview in which the interviewer asks questions from a detailed guide that contains the questions to be asked and the specific areas for probing.

Summary: - A short restatement of the main points of a report.

Triangulation: - In an evaluation, triangulation is an attempt to get a fix on a phenomenon or measurement by approaching it via several (three or more) independent routes. This effort provides redundant measurement.

Triple bottom line: – The social, economic and environmental dimensions of management.

\$USD: - A common abbreviation for United States of America Dollar currency.

Validity: - The soundness of the inferences made from the results of a data-gathering process.

Verification: - Revisiting the data as many times as necessary to cross-check or confirm the conclusions that were drawn.

WAN - Common abbreviation for Wide Area Network

Wide Area Network - A network that covers a large geographic region. WANs will typically be served by an interexchange carrier

Website - An organisation's own Internet presence, published through an Internet server.

Workstation - A high-powered personal computer.'

CHAPTER 1 INTRODUCTION

1.1 The research purpose and research outcomes

This thesis reports on the development of a Success Factors Model for Government Electronic and Mobile Service Delivery (GEMSD) and the testing of its usefulness.

A comprehensive analysis of relevant literature was completed to identify the factors that promote or inhibit successful implementation of GEMSD. The resulting information was compiled into a preliminary success factors model. The usefulness of this model was then tested by conducting a comprehensive case study of the Victorian Government and supplemented with three minor comparator studies from Finland, Singapore and the World Bank.

The primary purpose of this study is to provide a basis for the generation of a success model for delivering government services by mobile and electronic means. The development of this thesis provides a unique opportunity for an innovative study and model for practitioners involved in delivering government services to communities. The research outcome is a model based on success factors essential to Government Electronic and Mobile Service Delivery (GEMSD). It offers a critical analysis of current projects and delivers qualified information on preparation, development and implementation of GEMSD. For many reasons governments are searching for a researched method to convert existing service delivery mechanisms to electronic or mobile formats or improve the efficacy of existing systems. Whilst not all government services are capable of electronic delivery, as will be noted in the study, there are many that lend themselves to electronic and mobile format. Therefore the issue of optimal GEMSD is of primary significance to many governments worldwide and worthy of further study and intervention.

Whilst previous research in this field has been specific, this investigation takes the whole-of-government view point for electronic service delivery and as such represents a unique study in this area. It does draw upon previous studies in both private and public sector electronic or mobile services delivery and advances the body of knowledge by creating a widely applicable model available to governments.

Currently, there are a number of projects dealing with GEMSD throughout the world. However, the commonality of experience, identification of significant issues and

comparison of these projects has yet to be drawn together in a contemporary document. Moreover, the literature reviewed indicated the lack of a comprehensive reference model designed to optimise the development, unification, and implementation of GEMSD projects. This investigation addresses the major research question, ‘How can electronic and mobile services best be delivered for major cities in state or provincial governments?’ It develops a Success Factors Model for governments that are considering or presently engaged in GEMSD.

This thesis provides an opportunity for an innovative study and model for practitioners involved in delivering government services to communities. The research outcome is a success factors model which deals with issues of GEMSD. Whilst previous research in this field has been specific, this investigation takes the whole-of-government, that is, a government-wide view point for electronic and mobile or wireless service delivery and as such represents a unique study in this area. It does draw upon previous studies in both private and public sector electronic services delivery and advances the body of knowledge by creating a widely applicable model available to governments. Whilst the thesis adopts a management perspective, the thesis is not a project plan or methodology, nor does it focus on the end-user perspective. However, realisation of the benefits of GEMSD will largely depend on the end-user acceptance of it.

The thesis adopts an interdisciplinary approach, combining and analysing a diversity of fields such as public management, organisational theory, sociology, social psychology, strategic management and information systems. In turn it contributes to these disciplines by proposing a theoretical or interim model for successful GEMSD deployments and intra-organizational project groups. This theoretical model is then tested by gathering empirical data from an in-depth case study of the Victorian government, a comparison with governments overseas and application of the results to the Victorian experience to validate the theoretical model. While the data has been gathered over a lengthy period during 2004-2005 it has been further subjected to lengthy follow-up telephone interviews during the later part of October 2008. This was done to confirm the correctness of data and current relevance prior to submission.

In addition to the advancement of GEMSD theory, this thesis delivers several practical implications: it gives specific recommendations to public managers on how to conceive and implement GEMSD more effectively by understanding and emphasizing the success factors

critical to GEMSD deployments. It offers a model that proves useful for any government involved in either: the planning, development and implementation of GEMSD, or reviewing the efficacy of a system that has already been implemented.

1.2 Structure of the thesis

The thesis is reported in seven chapters.

Chapter 1 presents an introduction to the problem, beginning with an analysis of the past and current position of GEMSD. The problem is stated in general and then in specific terms. The plan of the study is presented, along with a delineation of applicable assumptions, definitions, and limitations.

Chapter 2 is a formal review of the literature of GEMSD. The discussion proceeds from an identification of recurring themes of factors required for successful GEMSD projects and inhibitors to success, which suggests the need for the present study.

Chapter 3 describes the resulting model derived from the literature review. It defines and illustrates the six areas of significance by demonstrating the success and inhibitor factors within the six areas. It further classifies the factors into domains and relates them across the entire model.

Chapter 4 identifies the philosophical perspective and methods employed to deliver and test the success factors and briefly summarises each stage of the study.

Chapter 5 presents the data collected and analyses the information obtained through the long interview technique. Analyses addressed the identification of model components, descriptive analyses of the variables identified and appropriate adjustment to the original model derived from the literature review.

Chapter 6 discusses the findings and drawing upon the information in chapter 5 it provides an insight into the findings of this study, presenting significant deductions and implications in an organised manner by research question and revised GEMSD model.

Chapter 7 presents the conclusions of this thesis and recommendations for further research in this area. Attached to the end of this thesis are appendices, which include: references,

interview instruments, interview responses, abbreviations, figures and tables, a glossary and *vita*.

1.3 Summary

International and Victorian literature on electronic and mobile government highlights the emerging field of GEMSD as important to governments in delivering services to a variety of customers in a cost effective and efficient manner. Much of the information available on electronic and mobile government deals with departmental or agency specific endeavours or relates to project based initiatives. This research focuses on an holistic approach to whole-of-government concerns by indentifying, categorising and indicating individual factors that either promote or inhibit GEMSD projects across government. It then orders these factors into a usable model to help government practitioners make informed decisions on factors affecting their work in either, a project at inception, or in reviewing the efficacy of systems that have already been implemented. As such this research makes a significant contribution to the body of knowledge and discussion on GEMSD. This chapter introduced the thesis and briefly described the research purpose and outcomes. It outlined the thesis structure and appendices. The next chapter presents a literature review of electronic and mobile government computing, describing the background environment and responsibility of public administrators in the delivery of government services.

CHAPTER 2

GEMSD LITERATURE AND SUCCESS FACTORS

2.1 Introduction

This chapter presents a literature review, describing the background environment and responsibility of public administrators in the delivery of government services. The chapter continues by describing the benefits associated with GEMSD, the various relationships in which services are relevant, and an audit of benefits verifying and highlighting individual success factors. Further, the chapter begins to form areas of significance for GEMSD planners, implementers and operators from the individual success factors highlighted. The chapter concludes with a summary of these groups in six areas of significance (AOS).

2.1.1 Background

The responsibility for administration and delivery of essential services is of paramount importance to all constituents and a primary task of government. Androit (1999) argues that the provision of services such as police, ambulance, public health and education, are considered fundamental to all areas of a community. The ability for governments to deliver these and similar services effectively and efficiently is a constant process of improvement for public sector practitioners. Mayer-Schonberger and Lazer (2008) suggest the last decade has witnessed unprecedented attention to the mechanics of information in government and the evolution of GEMSD. Varying models peculiar to e-government have been proposed by a number of entities including Layne and Lee (2001), the United Nations (2003) and Bennis and Nanus (2003), but few have specifically incorporated the mobile computing phenomena in government as suggested by Vincent and Harris (2008), or Trimi and Hong (2008).

As governments evolve, more and more products are added to the list of services provided. Some of these services are Government Key Public Infrastructure (GKPI) and are considered to be government only services, whilst others can be classified as areas of service open to partnership with other entities; however the successful delivery of all services is one of the most important roles within any government. The private sector experience has illustrated some of the benefits of electronic service delivery. The efficiencies highlighted by private sector experiences have hastened the

implementation of GEMSD. Similarly, West (2008), Gilbert, Balestrini et al (2004), Stahl (2002), and Tyborowski, Primack et al (1997), note that whether driven by government debt, service improvement, or competitive advantage, worldwide review of government service delivery and economic development, has hastened the introduction of technology-based automation into government processes.

Information technology provides a business strategy designed to substitute information-technology capital for information-handling labour according to West (2008), Roy (2007), Walker (2002), and Strassman (1985). Technologies, such as the internet have been seen as a means of communicating with customers or citizens for nearly a decade. Initially, governments' use of the Internet has been centred on two functions: communicating via e-mail and disseminating information by websites. A metamorphosis is beginning in government agencies. They are taking technology to the next generation by expanding the use of data communications and internet services to provide electronic service delivery.

Agnieszka and Agnieszka (2006), Pavlichev and Garson (2004), and Lamont (2002), note that electronic service delivery is not a new concept for private sector organisations such as banks, retailers and various commercially driven enterprises a view which is shared by Davison (2007), the Chinese government secretariat on information technology (2002), and Walker (1999). A wealth of innovation and expertise resides in the private sector and has been developed through several years of continual adaptation. Both Gordon (2002) and Oppenheim (2002), agree that governments and the public sector are not the repository of up to date information and expertise to identify an optimal approach to this type of service delivery.

When instigating alternative service delivery through technology, governments are confronted with several issues common to all. However, Schuppan (2009), Heeks (2006) Wane (1999), Lewin-Group (1998), Sims (1997) argue that there is a general lack of empirical material available to assist government practitioners in investigating, formulating, and delivering these services particularly in developing countries according to Zarei, Ghapanchi et al (2008). Political and social pressure to develop and utilise alternative electronic delivery channels is growing worldwide.

Governments face pressure to provide electronic and mobile services not only as service to constituents and clients but as a matter of national prestige amongst governments according to Heeks (2006), M2 Communications (2002), Lewin-Group

(1998), Daniel and Storey (1997). Issues impeding the timely introduction of GEMSD to governments vary considerably from simple geographic technological limitations to adequate financial accountability to the constituents of the community. Furthermore there is a risk associated with vulnerability of ill-informed or inexperienced government agency personnel selecting sub-optimal service mechanisms. This in turn may be exacerbated by the inherent difficulties associated with some governments outsourcing and tendering processes, which encourage the adoption of the least-cost option.

Cavanagh (1998) suggests that 'In today's highly cost-conscious business environment, no effort is undertaken unless it is cost justifiable', this is a view supported by Wang and Wang et al (2007). Wang & Wang et al also emphasise that with increased demands on public money Cavanagh's statement is still most relevant to public sector innovators a view shared by Lamothe, Meeyoung et al (2008), Dorris (2007), Cook (1999), and Webster (1998). Like most businesses, governments are required to project the benefit of the change through tools such as a capital investment analysis as suggested by Shank and Govindarajan (1992). There are many different techniques available with several thematic nuances that can achieve a comprehensive evaluation and auditability.

Although cost justification is required for new GEMSD projects, Walker (1999) argues that duplicity of service delivery will still be required well into the century suggesting that any GEMSD project is always an additional cost rather than replacement or redirection of funds. An illustration of his theory is the use of electronic delivery of consumer bills. This area is expected to grow significantly during the next five years, due to the increase in internet usage and the burgeoning number of home computers. However, governments will need to continue to present bills and accept payment from service recipients via traditional print and mail operations in addition to electronic forms as a means of transition.

2.1.2 Victoria and overseas

A milestone GEMSD experience in Australia has been unfolding in the State of Victoria. The Victorian Government, through the State Department of Development, has initiated programs to provide electronic services to its constituents. Multimedia Victoria (MMV) has been the Victorian Government's lead agency for this purpose.

Through program such as Victoria online, Victoria 21 strategy and its subsequent Global Victoria strategy, MMV has been through the process of implementing GEMSD with partnerships between government, industry and the community <http://vic.gov.au/mmv>. In the process, MMV has prominent partnerships between the State Government, Nippon Electric Corporation (NEC), ASPECT Computing and local governments. This project is a \$110 million program to re-engineer government internal communications and provide infrastructure for GEMSD in the State of Victoria. Recently the government introduced the Office of the Chief Information Officer (OCIO) and the Office of the Chief Technology Officer (OCTO). These have been introduced to provide standards and information resource to Victorian government departments.

Internationally, similar projects are under investigation or in progress. In his 2002 study West (2002) compared 1,197 governments, in 198 countries for GEMSD progress and functionality, recommending several of the services available in Maxi. Similar experiences are evident in the United States of America (USA) and Europe and Asia according to Unwin (2009), Murray (2008) McCauley (2002), and Newcombe (1997) throughout various levels of public administration. Areas of commonality begin to occur and identifiable success factors emerge. These emergent success factors and inhibitors are reviewed in sections 2.5 to 2.10 of this chapter. Before reviewing those factors affecting successful GEMSD it is necessary to identify the benefits that are gained from any GEMSD initiative.

2.2 Benefits of government electronic and mobile service delivery

To examine the success factors of GEMSD it is first necessary to understand the potential benefits associated with such services, and the various relationships in which services are relevant. Clarity of benefits is essential in any GEMSD study and an audit of benefits verifies and highlights individual success factors.

The ability of GEMSD and Information and Communication Technologies (ICT) to store large volumes of information and to retrieve or disseminate these volumes quickly provides a range of opportunities for government to offer new services to its jurisdiction and other relationship entities. Walker (2001) in his role as comptroller general of the United States, stresses; ‘Technology advancement, however, is not a panacea for government performance problems.’ He continues; ‘used effectively,

electronic government can help reshape government, making it more innovative, efficient, responsive, and accountable to the public’.

The GEMSD mechanism enables present government services as a cohesive entity, offering faster, convenient, and greater access to the whole-of-government in a more convenient manner. This applies in various relationship scenarios; Government to Jurisdiction (G2J), Government to Communities (G2C), Government to Business (G2B), and Government to Government (G2G). This view is supported by Christensen and LÃgreid (2008) and the US Government Audit Office (2003), concluding GEMSD ‘offers many opportunities to better serve the public, make government more efficient and effective, and reduce costs.’

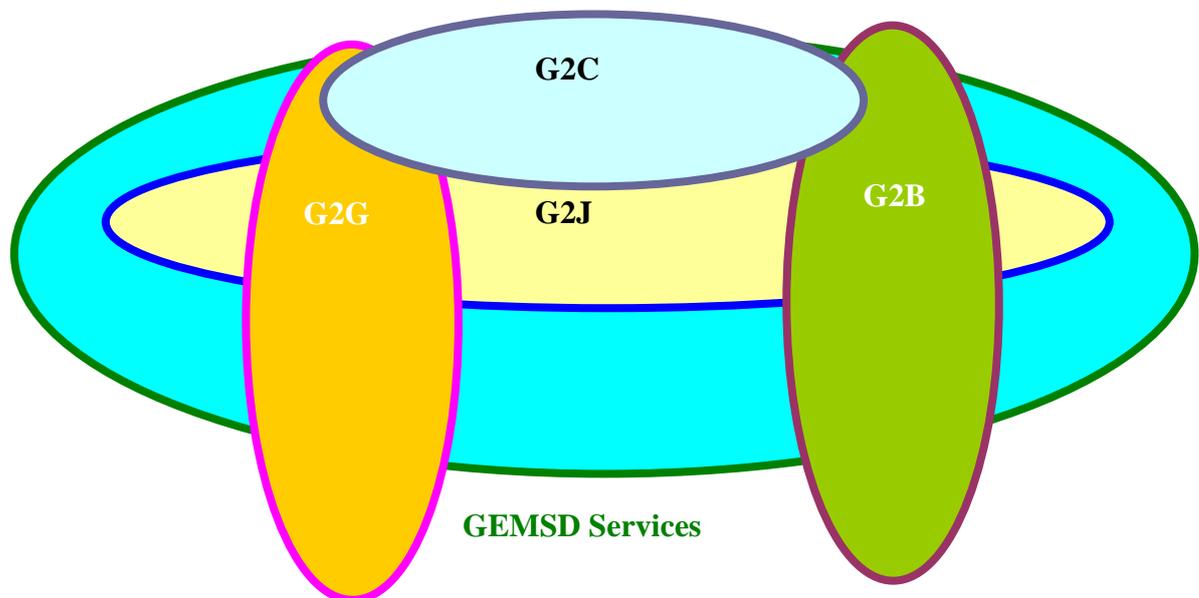


Figure 1 Integration and cross flow of services

The benefits of GEMSD include:

- Integrated services that break down the barriers of government structure and jurisdiction
- Greater choice of government services and delivery channels
- Better accessibility for constituents to government services
- More convenience
- Faster delivery
- Improved efficiency

2.2.1 Better services integration

Better integration of services can break down the barriers of government structure and jurisdiction. The hierarchical nature of governments and bureaucracies creates a natural impediment to efficient access to information and decision making.

Christensen and LÃgreid (2008), Dunn and Miller (2007) and Gordon (2002) suggest that New Public Management (NPM) is a management theory that deals with government reform by replacing rigid hierarchical organisational structures with more dynamic networks of small organisational units. This involves replacing authoritarian, top-down decision and policy making practices with a more consensual, bottom-up approach that facilitates the participation of as many stakeholders as possible, especially ordinary citizens; adopting a more customer-oriented attitude to public services; and applying market principles to enhance efficiency and productivity. GEMSD is a major part of NPM providing the dynamic access to a variety of life-cycle government services (as seen in Figure 1 of the previous page), minimising the traditional jurisdictional inadequacies and fostering NPM principles as noted by Bhathagn (2002).

GEMSD provides one point of entry to government services regardless of department, agency or jurisdiction. This lack of bureaucratic overhead can facilitate an easy navigation through the complex structure of government. Dunn and Miller (2007), and Gagliardi and Fiorenzani (2002) would argue that the GEMSD infrastructure and software tools needed for a loosely coupled network of governmental units allows agencies and departments to collaborate effectively, and provide a seamless one-government image regardless of origin. As GEMSD provides better-integrated services from government departments and agencies it tends to lead naturally to institutional reform by stakeholders and its customer orientation.

2.2.2 Greater choice of government services and delivery channels

Traditional methods of access such as face-to-face, telephony and postal services have been enhanced by GEMSD's customer orientation and dynamic access avenues. The multiple methods of access and greater operating hours for accessing government services have played an important role in the benefits of introducing GEMSD projects. Through a single GEMSD access portal, service users can choose a variety of cross jurisdictional services, these can be accessed through a variety of channels

according to Hazell and Doig (2001) De Meo, Quattrone et al. (2007). These channels include:

Government kiosks, private internet (domestic), public internet (such as libraries/universities) or WiFi hotspots offered by institutions or private providers such as cafes or airports, telephone - Plain Old Telephone (POTS), mobile phone or satellite phone to government call centres, Wireless Area Protocol (WAP), video conferencing, podcasts, digital television and geo-synchronous communications like satellite.

2.2.3 Better accessibility for constituents to government services.

Most entities that interact with government require access to public services without navigating the hierarchical bureaucracies which can impede service delivery and often dissuade government customers from full service utilisation. With various forms of GEMSD this problem can be alleviated.

In their 2008 study of e-government models Zarei, Ghapanchi et al. (2008) noted that with newer ICT, government users and suppliers can better access government.

Personal computers, digital television, and telephone call centres are some of the physical means available. On a more geographical or demographical basis users benefit from certain GEMSD advantages. Regional or rural areas have better access to services and products, the elderly and disabled can access the same services locally. Also GEMSD promotes the elimination of e-absent areas and improves e-literacy amongst its citizens and users.

2.2.4 More convenience

Convenience is making services available when people want to use them. For some time retailers have offered 7/24 access to products and services via electronic service delivery. Under GEMSD these access conveniences are offered by government information services. The British E-Envoy cites the example of solicitors accessing and issuing petitions via email eliminating court hearings and reducing the time taken (E-Envoy 2002). More importantly the solicitors can perform these petition applications any time of the day. Alternatively, Sifry (2009) offers greater convenience in expressing political opinion via various electronic media and on-line forum. In the early forms of E-Government it is common to offer government

information in brochure format giving users the ability to access information or regulation on a 7/24 basis irrespective of normal government business hours.

2.2.5 Faster service delivery

Traditionally government services have been a choice of face-to-face, telephone/facsimile, or postal. Whilst telephone and facsimile services are fundamental aspects of GEMSD, further benefits are to be realised through other forms of electronic service delivery.

The length of time it takes for a constituent to receive a service from a department or agency usually is influenced by a number of variables. The accuracy of form completion, the speed of the postal service, the volume of work being processed and the efficiency of the internal systems all contribute to time delays. GEMSD expedites this process by eliminating some of these variable factors whilst successfully fulfilling their obligation to their citizens according to Dorris (2007). Under GEMSD there is no postage delay, the form completion is corrected instantaneously and the internal system processing is spontaneous. Similarly, GEMSD avoids human handling errors of lost forms or letters and provides an accurate means of handling, tracking and auditing government services. In addition GEMSD improves the query process of works in progress.

2.2.6 Improved efficiency

The aim of developed governments is to provide better service to their citizens or constituents within its jurisdiction. Not only are the efficiencies of GEMSD provided to citizens and constituents, they are beneficial to other non-jurisdictional entities such as business, other governments, and community groups. Introspectively government derive efficiency benefits internal to its systematic function such as that outlined by the Hong Kong Information Technology and Broadcasting Bureau (2002).

There is a need for internal government improved efficiencies in GEMSD re-engineering of administrative processes and the re-organisation of information ownership promotes sharing across departments, Csuhaj-Varjú (2002). This ultimately leads to a standard operating environment with economies of scale, savings and greater audit transparency.

GEMSD offers more immediate internal hands-on efficiencies such as internal government support activities, like training, personnel records management and

general information dissemination. Similarly indirect benefits include: improvement in government staff electronic literacy, and reduction in physical storage of documentation.

The Pacific council on international policy determined that GEMSD provided increased transparency and accountability in the form of set rules and procedures within government a theme echoed by Bellvera, Mendiburub et al (2008). Further benefits derived from formalisation under electronic service delivery helped government contain corruption particularly in smaller manually orientated governments such as Mexico, Seoul and Egypt as suggested by Holmes, Ntiro et al (2002), and Bhathagn (2002). The British E-Envoy (2002) lends weight to this argument citing electronic procurement eliminating ‘maverick’ buying by individuals and more accurate use of public monies.

2.3 Future directions of GEMSD

With the acceptance and adoption of electronic service delivery, Tapscott (1995) predicted that every business or organisation will be unrecognisable in another decade. This has been borne out and according to Trimi and Hong (2008), Dunn and Miller (2007), and Lawrence, Corbitt et al. (1998) the main impetus for the acceptance and adoption of electronic service delivery is due to six drivers:

- Expansion of services;
- convergence of media and technology;
- increase in the number of users through more awareness and familiarity with electronic tools;
- Ease of access through internet tools such as browsers, search engines and directories;
- new business opportunities through new forms of service, and to add to Lawrence’s five service delivery drivers is the more recent development of
- greater use and acceptance of mobile and WiFi / WiMax technologies.

To enhance this adoption of service delivery and to maintain the impetus of government electronic delivery of service, practitioners will rely on relationship building, and virtualisation of constituents, in other words governments will become virtual business corporations with governments departments servicing communities through electronic media. This may be based on the department’s distinctive focus for example a transport department’s requirements such as registration, licensing,

testing and insurance. Alternatively it might be based on geographic focal points such as a variety of local shire council services. Trimi and Hong (2008), furthered the beliefs of Hagel and Armstrong (1997) and their theory to suggest that virtual communities will evolve indirectly spawning new initiatives and fostering new local community services such as bulletin boards, community architectures and newer means of delivering government services with much of it being based on mobile service delivery mechanisms.

The next section 2.4, deals with the individual factors inhibiting or promoting successful GEMSD.

2.4 Factors affecting GEMSD projects

The literature reveals a plethora of factors affecting GEMSD projects ranging from the integration of development teams to marketing campaigns for minority users. However it is evident that this overabundance of factors promoting or inhibiting success requires rationalisation, sorting and grouping to assist in providing a useable and implementable model for those organisations charged with the successful delivery of government services by electronic and mobile means.

In attempting to harness and sort success factors, the United States federal congress report in 2001 tried to summarise success factors with six mission goals, strategies and objectives as listed below:

- ensuring agency integration of information resources management plans, program plans, and budgets for acquisition and use of information technology and the efficiency and effectiveness of interagency information technology initiatives;
- developing, as part of the budget process, a mechanism for analysing, tracking, and evaluating the risks and results of all major capital investments made by an executive agency for information systems;
- directing and overseeing implementation of policy, principles, standards, and guidelines for the dissemination of and access to public information;
- encouraging agency heads to develop and use best practices in information technology acquisition;

- reviewing proposed agency information collections to minimize information collection burdens and maximize information utility and benefit; and
- developing and overseeing implementation of privacy and security policies, principles, standards, and guidelines.

Whilst these goals and strategies are relevant, they are extremely high level and require further breakdown and clarification to be of practical use. However in Heeks' (2001) original model for re-inventing government through the information age it is suggested that there are eight factors relating to the success or failure of projects, these are:

- External pressure
- Internal political desire
- Overall vision and strategy
- Effective project management
- Effective change management
- Effective design
- Requisite competencies
- Adequate technological infrastructure

In a later study Heeks' (2006) work continued in assessing the success or failure of initiatives by involving stakeholders in the review process and calls upon the involvement of 'champions', 'projects managers', 'clients', 'operators' and 'other significant stakeholders' in the clarification of success factors and their significance. The literature reviewed has revealed a commonality of important factors for GEMSD which promote or inhibit the success of initiatives, these have been grouped into the following associations for the purpose of this study:

1. Business re-engineering

In this environment it can be defined as the strategic initiation and control of change within government to provide better delivery of services to its customers. This may include the adjustment of the services being delivered and the department or agency ownership of data and provision.

2. Education

In relation to GEMSD projects or initiatives this can be seen as the capacity to impart knowledge or skill to those impacted by the introduction of GEMSD both internal and external to government.

3. Acceptance

GEMSD acceptance can be understood as GEMSD credence within government and by participants or users involved in the services delivered.

4. Security

Security in GEMSD is the stability of service and open review with the aim of data integrity regardless of technology platform and storage/retrieval method(s).

5. Cost

In the GEMSD sense, cost is not only the return on investment or the auditability and benchmarking, it incorporates the factors effecting or impacting on the service and the opportunity for alternative investment or public and private sector partnerships.

6. Access

GEMSD access is not only the ability to access regardless of geographical location or physical ability but the ability to service all participants including expatriot or transient parts of the constituent jurisdiction.

2.5 Business re-engineering

GEMSD can be used to improve the productivity of public services and the responsiveness of government. However, as suggested by LÃgreid, Verhoest et al. (2008), and Corrigan and Joyce (2000), without substantial re-engineering of the organisational relationship to the public, GEMSD on its own will achieve little. Similarly McDonough (2000) suggests that any GEMSD initiative must have radical re-engineering of government and services to successfully attain full GEMSD utilising a 'whole-of-government' or holistic view. Irish Prime Minister Bertie Ahern (2002) stylised Ireland's GEMSD as 'Public Services Brokering' requiring large scale re-engineering of government and its services. Agnieszka and Agneiszka (2006) and the president of Canada's Treasury Board referred to GEMSD re-engineering as the process of removing government 'silos' of information in favour of customer focused

‘one-stop’ GEMSD or reducing the shredded decentralised approach as noted by Agnieszka and Agnieszka (2006), and the Office of the British E-Envoy (2001).

To successfully create the change in government business requires several success components to be addressed for a controlled evolution, these are:

- Authority
- Seamless government
- Conducive legal and regulatory environment
- Single access
- Multi-jurisdictional transfer of policy
- Interoperability of legacy and ICT systems

2.5.1 Authority

As part of the business re-engineering process, there is a public mandate to acknowledge and prepare constituents for change in the delivery of services, responsibilities and rights under any new service provisions. The political success of government business re-engineering relies on stimulating and maintaining stakeholder support for the goal(s) of GEMSD change. This applies to the constituent body as much as the internal government facilitators. Business, community groups and the individual must be aware and in favour of the terms, conditions and deliverable outcomes attributed to GEMSD business re-engineering.

As such an internal mandate requirements to facilitate change highlight that GEMSD projects have a tendency to expand wider and wider responsibilities (scope creep), to consume additional resources (budget over-runs), and to extend deadlines further into the future (timeline elasticity). To avoid these pitfalls, change projects such as government business re-engineering need a mandate or authority that sets out objectives, timeframes, measures of success (and failure), resources, personnel, and authorisation. Riley (1999) suggested that change can’t really be imposed, it has to be negotiated and authority must be recognised, this is a view which has been supported and extended by West (2002), and (2008), and LÅgreid, Verhoest et al. (2008) However Hughes (2008) argues that it may be necessary to have the political and bureaucratic conviction to force change.

Channel Rivalry within government can be defined as government ‘in-house’ conflict resulting from introducing change. In implementing GEMSD change, governments and their agencies experience several challenges within the Bureaucracy requiring collaboration among different levels of government:

- Who takes ownership, responsibility and the lead in the project?
- Areas of demarcation or ‘Turf wars’ lead to hostility between agencies and the overall project.
- How do you keep enthusiasm for the project?
- How do you deal with issues of continuity of leadership, project length and project champions?

How do you overcome implementation difficulties regarding standardising of systems between agencies and creating a non-agency or department dependant operating environment. Again Agnieszka and Agnieszka (2006) suggest removing the decentralised approach propagated by fragmented empires in favour of a more holistic approach by governments.

2.5.2 Legal and regulatory environment

The legal and regulatory environment can be defined as the necessary framework for successful GEMSD operation. This can be split into two major areas. Firstly the internal government legal changes necessary to create a ‘whole-of-government’ approach to GEMSD, limiting the internal legal demarcation amassed from generations of agency specific regulation and legislation and empowering the ‘one-stop-shop’ or single portal approach of GEMSD. Secondly, the amount of external adjustments to legislation required to enable working relationships with other external governments, industry and community groups as proposed by Joia (2008) in relation to G2G intellectual property and permission rights. An example of this is the broadening of the consumer protection act in Finland as described by Rekola and Pohjanpalo (2002), to accommodate purchases of goods and service electronically and extends the warranty period to two years from the date of purchase. This legislative change not only protects the consumer but provides confidence in GEMSD and electronic commerce in Finland

Providing a successful operating environment for GEMSD poses significant design problems outside technical considerations. Issues of major concern to governments

worldwide include correct legislation to cater for the changes in service operation. GEMSD practitioners and legislators are involved in considerable conjecture over legislative inconsistencies and internal regulation demarcation.

Similar topics of design and regulation include taxation equity, copyright, compatible encryption standards, and acceptable contract laws for industry and governments. To provide a whole-of-government approach requires adjustment and well-drafted legislation to ensure success of delivery and protection for all parties concerned. Chandran (1999) highlights Singapore's legislative approach to eCommerce by acknowledging electronic records and signatures through adequate legislation. Similarly in Canada legislators have made it possible to create financial contracts from overseas via electronic service delivery as noted by Crawford and Wiercinski (1997). However while legislation and regulation enables better GEMSD it does need to address issues of cross-jurisdictional demarcation. Onken, Fischer et al (2005) expressed this view on the impacts of government regulation in the transfer to technology-based systems and surmised regulation must be taken into account to achieve competitive advantage through better management.

Many countries and even states or provinces are confused over areas of jurisdiction. Both Greenwood and Campbell (1997) and Gottlieb (1998), argued these issues signal the need for a well-regulated legal infrastructure that supports the use of GEMSD and electronic commerce for both business and government transactions across all geographical and demographic boundaries this theory has been supported over many years of e-government and more recently m-government development by researchers such as Rassler (2008), Joia (2008), Lenk (2006) and Sookman (1999). Riley (1999), suggested that, 80% of ESD takes place in the United States (U.S.) and that Europe is smaller in transactions' size. Yet the European Commission has legislation to facilitate successful ESD and GEMSD. This legislation only covers Europe and not other jurisdictions. As yet the U.S. is to legislate on electronic service delivery. Gaylord (1999) proposed that the U.S. federal government adopted a minimalist approach relying on self-regulation from service providers and users from the outset. If GEMSD is to be delivered adequately and equitably, cross-jurisdictional agreements and legislative proposals must be in place and be workable.

In Asia the opinion differs with Hsiu-Fen and Gwo-Guang (2006), and Sani (2002) suggesting legislation is too slow in keeping pace with the demands users are placing on GEMSD. Sani quotes Professor Dr Khaw Lake Tee of Universiti Malaya's law faculty, suggesting 'The shift to electronic (and mobile) government also requires that certain changes be made to existing laws, regulations and orders that regulate the manner in which transactions between Government departments, and between the Government and its citizens are conducted.' He continues by elaborating, that many statutory regulations have been drafted with physical and document or paper transactions in mind, therefore requiring considerable rethinking and drafting.

2.5.3 Single Portal

Currently one-stop government reflects a key trend within the present evolutions in GEMSD according to Pavlichev and Garson (2004) and Wimmer and Traunmüller (2002). It refers to a single point of access to public services and information. Online one-stop government requires that all public authorities be interconnected electronically.

Government services are available to their customers (constituents, private companies or other levels of government) through a single point of access or portal. This is done regardless of origin of the service and has no reference to the different public authorities or private service providers that may facilitate the provision and/or delivery. Similarly the services and information are presented in a well-structured, uniform and easily understood manner, which is designed to meet the customer's needs and requires minimal knowledge about the functional fragmentation of the public sector. De Meo, Quattrone et al (2007) suggest a series of intelligent agents to facilitate a seamless single point of access for government customers thereby relieving them of cumbersome search agents and multiple questions to arrive at their service destination.

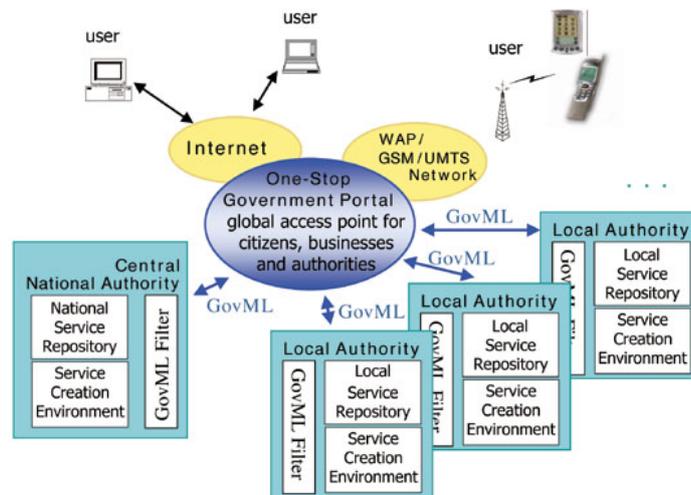


Figure 2 Single portal service delivery (source: Auditor General’s Office 2007)

Existing government structures and government fragmentation have evolved out of traditional modes of information exchange. Tasks and responsibilities have been divided between agencies or departments within government, and between different levels of government, in accordance with requirements of service delivery. Single portal service delivery has challenged the traditional organization of government services around the needs of the citizens rather than the structural framework of government as seen in Figure 2.

As suggested by Traummüller (2002) and Lenk (2002), through single access portals, constituents are becoming indifferent to existing structures, and are focused instead on efficient service fulfilment, a view further supported by Pavlichev and Garson (2004). This is most evident in the Infocomm Development Authority of Singapore (IDA) and their eCitizen program (2004) and Beijing’s transcending from eGovernment to mGovernment. Song (2005) would suggest this enables fragmentation free-seamless access through one point of access. However, several questions are raised with single portal access, also can these economies be realised.

- Can duplicity of agency or departmental services and media be removed?
 - Correspondence
 - Language
 - Printing
 - Media presence

- Internet
- Individualised marketing
- Can GEMSD facilities such as kiosks and on-line services reduce the need for distributed office hierarchies and duplicated staff?
- Can processes and procedures be streamlined to encourage single portal efficiencies?
- Do certain Key Public Infrastructures need to maintain individual presence?

Or do existing search engines, browsers, and access methods suffice in GEMSD and allow customers a fast path to exact requirements without the necessity and expense of single access overlays? Panopoulou, Tmabouris et al study (2008) of websites and evaluation would suggest otherwise recommending standardisation between avenues and promoting consistency not apparent in ad hoc or multiple government portals.

2.5.4 Multi jurisdictional policy transfer capability

External influences to GEMSD from nations, regions and provincial states are losing their omnipotence due largely to the growing authority of international organisations and businesses. Globalisation of borders refers to the growing political, social and economic interdependence among countries as reflected in increasing cross-border flows and linkages of people, goods, services, capital and know-how. Sociologist Malcolm Waters (2006) defines globalisation as ‘A social process in which the constraints of geography on social and cultural arrangements recede.’ Can all policies be transferred through a GEMSD? Are traditional services being eroded by the technologies being implemented?

One of the strategic goals outlined in the Government of Ontario’s economic plan (1999) issued in March 1999 called for Ontario to be ‘one of the best international jurisdictions in terms of global citizenship and cosmopolitan outlook’ and to be the ‘preferred home for the world’s best and brightest’. Can this be translated through GEMSD alone? The issues of multi-jurisdictional transfer include: taxpayers or constituents finding it difficult to foresee or deduce the projected outcomes of varying jurisdictions and the benefits of policy transfers between traditionally separate jurisdictions or specifically the benefits to be gained from this aspect of GEMSD. Joia (2008) supports and extends this theory however does raise the issue of possible

intangible asset or intellectual property disputes which may occur such as when a private sector intermediary is used in a G2G process.

2.5.5 Legacy and ICT systems ported

For public managers, Maclin (1998) notes the phenomenal growth of ICT and GEMSD-technologies have been accompanied by a growing frustration as to how these technologies might be effectively integrated within existing technological structures.

Therefore the range of goals that public agencies and managers set for themselves is as broad and varied as their resources. Existing legacy infrastructures have to be merged or redeveloped to incorporate ICT and suit GEMSD. These lead to technical issues of design, network consolidation, platform management, network management and the 'turf wars' or what responsibilities reside where with which agency.

One simple example of these is business cohesion or disaster recovery. King (1997), suggests from a management perspective, disaster recovery is the computer component of business process recovery. He continues with the premise that companies and governments should be expanding their definition of disaster recovery beyond technology to cover whatever is necessary to keep the organisation running without significant loss due to an unforeseen disaster. That can include everything from prearranging for alternate office space if workers cannot return to a smoke-damaged office, to cross-training employees so workers from a finance department, for example, can do the work of customer service representatives. This is similar in GEMSD, whether delivered by internet or any other service access continuity of service is imperative. Unwin (2009) discusses that in a successful up-take model it is necessary for government decision-makers to identify and examine any critical government agencies for which a diversity of local-access facilities may be required to ensure near 100% availability of electronic service. Community confidence is imperative to the acceptance of GEMSD. To this extent it is important to maintain and evolve legacy systems into the new service delivery model.

According to Good (2003) one of the major factors in legacy system evolution is cost. Few governments can afford a complete change of computing technology to simply assist the implementation of GEMSD. Experiences such as Victoria, Finland and Singapore have revealed that governments are more likely to overlay front-end web

facilities over legacy systems than move entirely to a new computing or ICT technology according to Maclin (1998). Figure 3 below indicates the trend adopted by governments wherein existing agency or departmental silos of information are maintained separate and information is retrieved from these silos to form a whole-of-government image of information in a separate repository.

Legacy System Overlay Model

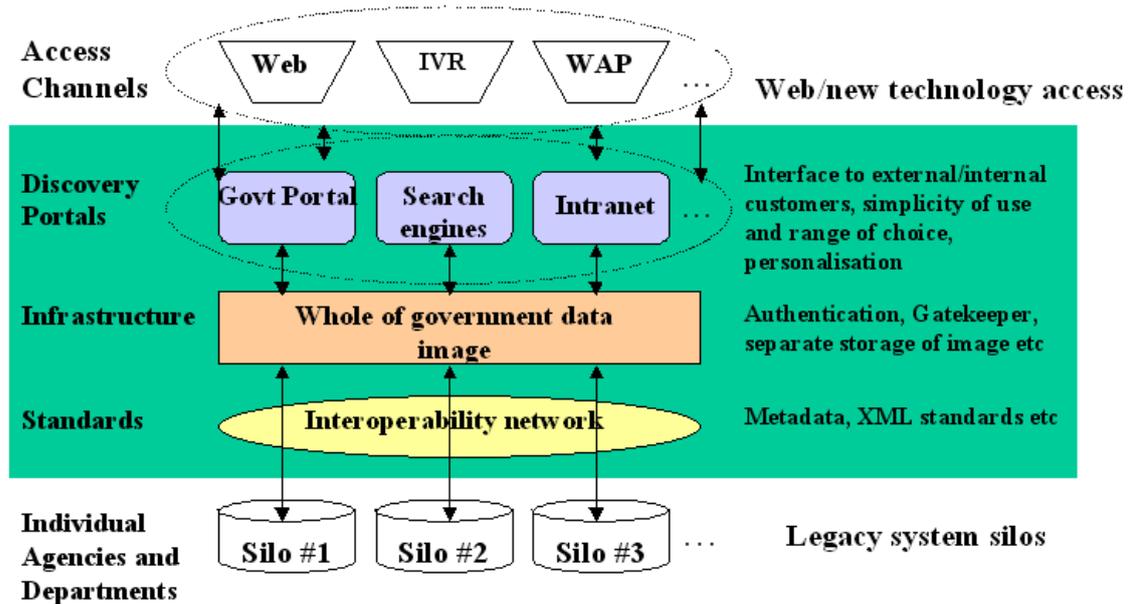


Figure 3 Legacy system overlay model (source: www.govonline.gov.au Integrated services across government)

The process of business re-engineering is not new and has common parallels between public and private sectors: In adapting success of GEMSD projects there are five major areas of interest which contribute to success or inhibit GEMSD projects. These can be modelled to indicate the level of success accordingly. The re-engineering of government services cannot be performed in isolation and relies on several other factors including education of the public and government agencies.

2.6 Education

In GEMSD projects education is one of the key factors present in successful GEMSD projects. The provision of ICT alone will not provide the results governments require from GEMSD. As Corrigan and Joyce (2000) indicate ICT alone will only achieve

disappointing gains for the public and requires the benefits of education and re-engineering to provide responsive services and democratic accountability.

Through GEMSD, the public sector is able to provide access to an enormous amount of information to anyone who has access to the internet. Harnessing the potential of the technologies now available to the public sector is critical. However, Hazell and Doig (2001) contend it is not simply a matter of creating volumes of web-based content. It is about providing access to up-to-date information and services that are required, relevant and that can be easily or intuitively accessed by people with limited computer skills and technological equipment.

Education may be broken down into five aspects directly relating to inhibitors or success factors affecting GEMSD projects. They are grouped as follows:

- Education and the degree of service duplication
- Education and access points
- Standard operating environments and competing technologies
- Service redefinition
- Skill sets and evolution

2.6.1 ICT literacy and duplicated service delivery

Liff (2000) argues that without education and ICT literacy intervention from governments it is possible to exacerbate social divisions. Nava and Davila (2005) continue by suggesting that presently ICT usage is predominantly the domain of young, well-off users and that without interventions such as Finland's cyber cafes and technology centres a division will occur.

These social divisions have been popularised with the label 'the digital divide' and is a politically contentious issue with comments from most heads of government. Huta (2002) defines the term Digital Divide as the 'social implications of unequal access to information and communications technologies and to the acquisition of the skills necessary for government customers to enjoy full inclusion' in GEMSD.

Traditional service delivery models have relied heavily on 'over-the-counter' transactions, mail, and telephone access points to provide the range of necessary government services or information exchange. It is important to maintain a fully

duplicated service delivery mechanism to provide for all government customers, however it is anticipated with GEMSD a reallocation of resources will occur with greater user up-take. The traditional 'over-the-counter' services will reduce in favour of GEMSD provision. ICT Literacy and learning is considered to be the primary driver behind this 'shift' in resources. Nava and Davila (2005) suggest literacy programs and skills being implemented in educational institutions will flow through to a greater proportion of GEMSD users. Various forums and groups have evolved to facilitate this, like Information Communication Technologies for Development (ICT4D) (2009) and industry bodies. In 2006, at the end of his tenure, outgoing UN Secretary General Kofi Annan launched the Global Alliance for ICT and Development (GAID). It is described as a 'multi-stakeholder forum' and a 'cross-sectoral platform and forum that brings together all stakeholders representing relevant constituencies'. One of the core roles of GAID is the economic development, especially of impoverished or disadvantaged segments of society through ICT and GEMSD education. Prior to this in Finland a study by the government statisticians Nurmela, Parjo et al (2003) revealed a greater uptake of GEMSD services with the introduction of GEMSD and ICT literacy programs.

Gilbert, Balestrini et al. (2004) and Geiselhart, Griffiths et al. (2003) support this theory suggesting that public service managers need to consider both the barriers to adoption and the benefits of adoption if they are to develop plans to increase the take-up of their electronic services.

2.6.2 Public use of service access points

With the evolution of GEMSD and the progress in information available from brochure ware to fully interactive services, including mobile, it is becoming clearer that GEMSD is providing a more accessible means of conducting business with governments according to Wimmer and Traunmüller (2002). Fabris (1998) suggests that in the American experience GEMSD is reshaping customer service in agencies with poor service reputations and cites eleven cases from across the country.

In the Victorian experience computer use in relation to GEMSD has improved. This appears to be the trend across Australia according to the Australian Bureau of Statistics (ABS).

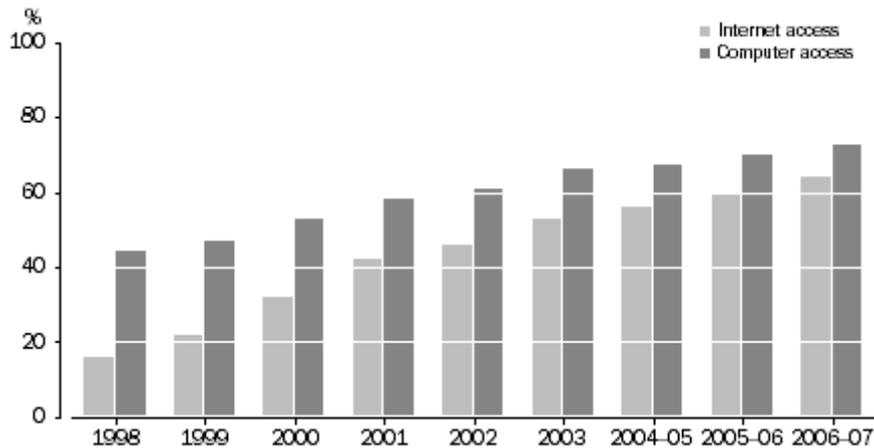


Figure 4 Household internet and computer access (source: ABS 2008)

According to the ABS (2008), Figure 4, Household Use of Information Technology (HUIT) patterns of Australian, and therefore Victorian, households have shown a steady growth trend. In 2007, 43% of all Australian households had broadband connection. The Internet was used by 23% of adults to pay bills or transfer funds (up from 17% in 2001), 21% of adults used the Internet to access government services (up from 16% in 2001), and 15% of adults shopped via the Internet (up from 11% in 2001).

In 2002, 61% of Australian households had access to a computer at home (up from 44% of households in 1998) and 46% of Australian households had home Internet access (up from 16% of households in 1998). Pullen (2002) contends that the number of adults using the Internet will continue to grow strongly though the rate of growth is starting to slow. In 2002, 58% of Australian adults accessed the Internet, rising from 31% of adults in 1998. Similarly access to the Internet in homes revealed a particularly strong growth during the same period, from 13% of adults in 1998 to 43% of adults in 2002. Access points or places of access revealed that, adults were most likely to access the Internet from home.

The internet and GEMSD usage patterns represented from ABS figures are consistent with other results investigating user patterns, as other means of access such as kiosks seem to be under-patronised. In the Victorian user study conducted by Singh, Ryan et al (2001), between July 1999 and February 2000, it was apparent that the use of government kiosks to access GEMSD was not as high as anticipated by MMV and NEC in their Maxi project. This result was consistent with other kiosk projects

studied such as Queensland and the Australian Capital Territory's (ACT) 'Austouch' project according to Sing, Ryan et al. (2001). This is reflected in comparator countries.

Consistently throughout the literature the question of fully duplicated service delivery indicates that traditional methods of service delivery such as written, telephone, fax and counter services are to be complimented and not replaced. However with the economies of GEMSD and redistribution of access to government services, there is an argument for reallocation of resources within governments to fully support the majority of service traffic. According to Sevilla (2006) in some countries such as Spain this affirmation to the right of access has been confirmed through legislation by individual states and jurisdictions.

2.6.3 Competing technology and standard environments

With the evolutions in technologies and the continuous change this introduces, governments are confronted with an ever-changing environment for GEMSD according to West (2008). Linked to this is the ability for government customers to keep up-to-date with technology innovation and the associated cost, learning curve or culture change.

Arden and Palmer (1999) suggest that government key public infrastructures (GKPI) must be kept to an accessible standard for all users. They contend that security is the key motivator for this standardisation and that a common access standard is the by-product for users, thereby delivering a contiguous user access point.

Alternatively Lemley (1999) argues that governments should not be in the business of setting technical standards particularly in relation to open interoperability and standard setting process for e-commerce and e-government. This view is supported by a recent United Nations (2008) study on e-government suggesting because of the cost and resources required to provision extensive operating systems many countries are excluded by prescriptive standards.

As it is necessary to maintain fully duplicated methods of service delivery and information exchange as highlighted in section 2.6.1, so too is it necessary to maintain the broadest electronic operability under GEMSD. d'Auray (2003) of Canada and Mustajärvi (2002) of Finland support this view citing problems with remote users and technology inhibitors compelling GEMSD providers to maintain a broad range of

technology access incorporating older systems with new. Mustajärvi continues by saying this applies to internal government users as well.

2.6.4 Silos and umbrellas

As indicated in the legacy systems overlay model in section 2.5.5 (Figure 3), individual agencies and departments are more likely to maintain existing legacy systems as silos of information with databases being interrogated to provide functional images for government's purpose. It is worth noting that this process has been used in Finland since 1985 to electronically accumulate the census from various databases based on citizen ID's.

In the proposed Geospacial Emergency Information Network (GEIN) developing in the Victorian government, the emergency services departments, agencies and authorities are providing data from several databases to form one centrally indexed image for common use in all emergency services. Pavlich and Garson (2004) argue that this method of maintaining and sweeping information silos will remain for some time in the GEMSD arena as few governments can afford the wholesale change approach to complete GEMSD overhaul.

A secondary argument proposed by McDonough (2000), suggest that this silo situation will be prolonged by senior and middle order bureaucrats as 'turf wars' fearing the loss of resources and budget. McDonough goes on to cite the New Zealand experience where Jenny Shipley, then prime minister of New Zealand, indicated that 85,000 people worked for her government before reinvention; however after re-engineering this figure was reduced to 32,000 government employees legitimising the bureaucrats fears.

2.6.5 Skill sets and evolution

Albutt (2002) identifies skills training in GEMSD as a major factor in successful projects, arguing that there is often a willingness to spend money on hardware, software, and data, but not on the skills-training which will enable people to use the new technology effectively. He continues saying that this kind of short-sightedness is so widespread and prevalent that he suspects it is caused by a form of 'cultural blindness' in numerous governments.

Dalton (1999) also subscribes to this theory and suggests that this is endemic of both private and public sectors with little emphasis being placed on skills training for those involved in delivering GEMSD and e-commerce facilities.

Dalton cites five areas necessary to facilitate successful GEMSD, these are:

- training of qualified personnel
- managers now need to establish not only that their employees are technically proficient at using the agency's Internet services, but that these services are not miss-used by outside intruders
- promoting inter- and intra-organizational cooperation identifying and structuring the information databases (or database fields) that will be made accessible through the Web site
- developing staff expertise
- designating an agency Webmaster and providing for staff support once the site has been implemented

Moran Jr. and Daniel (2008) contend education, both internally and externally is a key component of GEMSD. They strongly support internal training for government employees. Few projects can be successful without having allowed resources and time to education citizens, business and internal government service providers with the necessary skill sets to gain maximum benefit from government services offered under GEMSD.

2.7 Acceptance

Central to any initiative in GEMSD is the migration of traditional government service customers. Enabling a 'mind-shift' to a positive community up-take of the technology is essential. Hart (2008) and Davis (1989) recognise that in any public infrastructure shift, community up-take, or social engineering of customer usage is crucial to the success of the project and it cannot be assumed that the up-take will be immediate,. New shifts in government service can vary from bill payment and immediate benefit transfer, to home-voting, and will necessitate a considerable change in usage patterns. From the government agency's perspective, it is necessary to improve business processes and provide user-friendly interfaces to government services. An electronic or web-based service enables agencies and authorities to remove middle layers of service delivery that include collecting business information from others, formatting and entering that data into a computer application and then

distributing reports and information disseminating once processing is completed. From the user's perspective, web browsers are intuitive and understood by a large portion of the community, reducing learning curves and slashing training expenses for government. It is not unreasonable for governments to expect internet access costs to be as much as 50 percent lower than private or leased telecom lines which may be used currently. Similarly, web-based service delivery, including mobile, can be run on less expensive computers than mainframes, resulting in significant savings and greater longevity for existing legacy systems or mainframes according to Guijarro (2009), West (2008) and Chung, Hong et al (1998). Also from a technical position, the ability to integrate diverse systems on open standards, such as the internet, supports integrating multiple applications running on different computing platforms across many areas of government.

2.7.1 Honesty and sharing

Gordon (2002) suggests New Public Management is a kind of management theory about how to reform government by replacing rigid hierarchical organisational structures with more dynamic networks of small organisational units; replacing authoritarian, top-down decision and policy making practices with a more consensual, bottom-up approach which facilitates the participation of as many stakeholders as possible, especially ordinary citizens; adopting a more customer-oriented attitude to public services; and applying market principles to enhance efficiency and productivity.

Gilbert, Balestrini et al. (2004) and Valdez (2002) go on to say the reasons individuals choose electronic self-service delivery methods over more traditional methods of service delivery include trust, financial security, information quality, time and money. He suggests that user willingness to use the GEMSD option will be present if governments and agencies develop trust relationships with individuals and groups, assure them that their financial details are secure, provide information that is relevant, accurate and up-to-date, and save users' time and money.

Dunn and Miller (2007) support this view and add that stakeholder confidence will not only assure faster uptake of GEMSD but involvement in the design process will act as a catalyst in the evolution of service delivery particularly if trust is established

early in the process with thorough participation. This is highlighted in Perrott's stakeholder action matrix as seen in Figure 5.

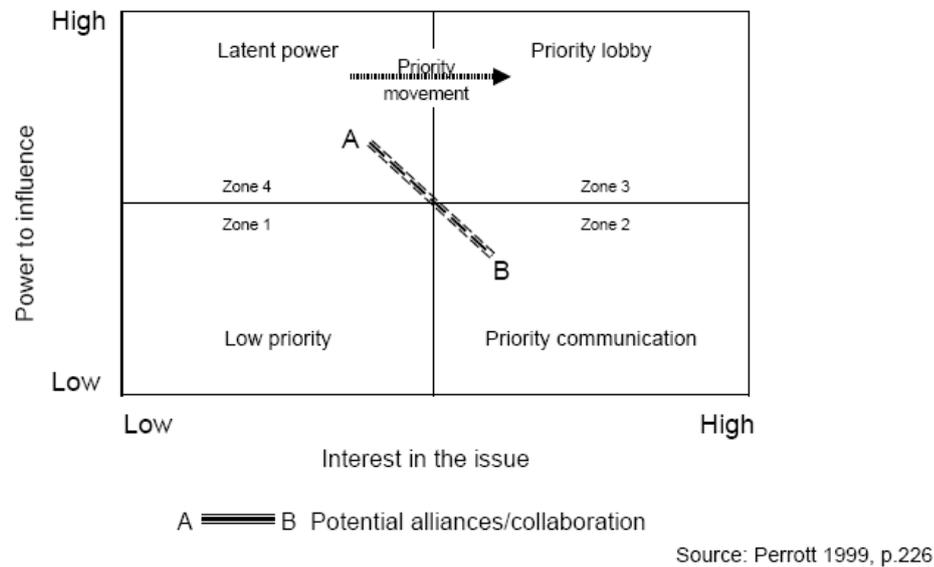


Figure 5 Stakeholder action matrix (source: Perrott 1999)

2.7.2 Managing the new order

Joseph Stiglitz, former Chief Economist of the World Bank, summed up this factor when he said: ‘Many key decisions are complex, and there is considerable uncertainty about the consequences of alternative measures. The policy-making-bureau, in most governments, is limited in size, and is typically overloaded. The new technologies hold out the promise of drawing upon far wider expertise. The challenge is how to do this in the most effective way’ according to Fletcher (2002).

Gent (2003) and Corrigan and Joyce (2000) argue that there needs to be a better relationship between politicians and management in government to achieve successful GEMSD. Also he sees a need to change the habits of administration which tend to impede the responsiveness of public services to necessary changes such as GEMSD projects, Gilbert, Balestrini et al. (2004) suggested that better change management is required to better facilitate GEMSD in government, while Grönlund (2002) has similar views he suggesting better planning and design of project will better deliver GEMSD benefits. Whilst better change management is important Halaris, Magoutias et al (2007) recommend more consistent and regular quality checks to ensure the standard of GEMSD and therefore better management of the new services being delivered.

2.7.3 Process participation

There are many difficulties when setting out to engage the citizens in the public policy process, particularly when it involves substantial change to the way they interact with government. Our electronic and information technologies offer an array of choices. Presently, part of the problem as to why there is not more of a migration to internet and mobile platforms, and engagement in GEMSD, lies within governments who have vested interests not to change. Dalton (1999) argues that government institutions are aware of the changes going on in society and the fact that GEMSD is a tool to engage the citizen. Rather, the problem is historical and requires a willingness to develop the tools of change to further engage citizens and business.

Finland's approach to this matter has been very open by involving citizens and business in the whole GEMSD process. In November 1999, the Finnish Ministry of Finance launched a project to improve the potential of citizens to influence government and therefore GEMSD, by means of ICT. The project was called New Information Technology and Citizen's Possibilities to Influence Decision Making (NITCPIDM). It consisted of three parts, a survey, a pilot portal for citizen services and the setting up of a discussion forum www.otakantaa.fi (**otakantaa** translates to: share your views with us) where citizens can comment and give their views thereby engaging the citizen and ensuring participation in the process and hopefully ownership Pavlichev and Garson (2004). This view is furthered and supported by the investigations of Horst, Kuttschreuter et al (2007) in their survey of electronic government in the Netherlands which examined risk perception and personal experiences concluding trust and participation were the main determinants of adoption and usefulness of government electronic services. Similarly the work of Bellvera, Mendiburub, et al (2008) for the World Bank cites a number of transparency and trust issues required to attain successful GEMSD generally through information sharing.

2.7.4 Customer relations and support

Technological advancement and broadband infrastructures, such as cable television, optical fibre networks, and mobile computing have provided a catalyst in the convergence of media technologies. Many of the services which governments provide use a variety of these technologies including video, voice, data, fax and image says Biran (1999). Now it is possible to transport and deliver services electronically

to a broad range of internal and external customers regardless of location. Also it is possible to combine the technologies to deliver multiple and interactive services to customers. The appropriate convergence and use of media technologies can have a significant bearing on the overall success of a GEMSD initiative.

This apparent flexibility and transportation of services applies to customer relationship management. GEMSD services are a whole-of-government approach, which should be supported accordingly with better customer relationship management from a variety of government agencies. In the Singaporean eCitizen, IDA (2004) project this has been realised through the eCitizen portal. It can be accessed anywhere using an Internet connection. Members of the public who do not have access to the Internet from home or workplaces or who require guidance to access government e-services will be assisted by helpers at twenty-two eCitizen Help Centres distributed around Singapore.

2.7.5 Click and collaborate

GEMSD is just another form of governments disseminating information to its customers, citizens, business and other levels of government. In many instances government resources are limited often causing delays in traditional service delivery methods.

As a success factor in GEMSD projects it is necessary to establish if the project is just another form of queuing request for information or does it add value to the customer with better response to their needs?

Most proponents of GEMSD are quick to note the speed and access ability available under GEMSD and the degree of information available. Also for those sites with interactive transactions how convenient it is to expedite transactions with government. These are seen as benefits of GEMSD and do add value however it appears the test of successful GEMSD projects is 'the question' that does not fit the information provided. In his 2002 study West (2002) tested 1,197 government web sites with a simple email question 'I would like to know what hours your agency is open during the week. Thanks for your help.' Email responses were recorded based on whether the office responded with an answer to the question and how long it took for each agency to respond in business days. This test was designed to measure public sector responsiveness to email questions.

The results supported the view that most sites were published information only and did not respond to direct questioning well, resulting with only 19 percent of agencies responded to the emailed question, 75 percent did not, and 6 percent had broken email links or addresses that prevented a response. Twelve percent responded within one day, three percent took two days, two percent responded in three days, and two percent replied in four or more days. Results from West's later study (2008) were similar to the original and confirmed many of the 2002 findings. Singapore and Australia (Victoria) were still amongst the most highly ranked in the world with Finland just out of the top group West (2008). The most surprising result was only 3 percent had any mobile or PDA interface offering and would indicate an area due for significant growth.

2.8 Security

Security of information is of paramount importance when considering the scale and scope of services offered by governments. The misappropriation of data transmitted over the GEMSD networks or stored in networked computers can include social security details, credit card numbers, criminal, medical or electoral records, electronic funds transfer details and any other transaction used by public administration.

Hoffman, Novak et al. (1999) highlighted this concern and consider that the primary barrier to the successful development of the world wide web and GEMSD is the current lack of consumer trust in the security of the new medium particularly in the area of credit card fraud. Similarly, Arden and Palmer (1999) proposes that any electronic service delivery via the internet would be subject to security vandalism and that conscious damage would rate as a higher threat when considering computer viruses, software vandalism or denial of public service through malicious acts. Still nearly ten years later the same issues plague GEMSD projects as highlighted by Vijayan (2008), Rassler (2008) and Panopoulou, Tambouris et al. (2008).

2.8.1 Stability of service

A paramount facet of GEMSD is the attaining of governments' social objectives and responsibilities in the most efficient way. Confidence in the service delivery mechanism is essential to customer (citizen, private enterprise or other public administration) confidence and participation. This is particularly important when moving into a transactional-based stage of GEMSD. Hazell and Doig (2001) argue

that at the end of the day, if a stable infrastructure is not in place for the public and business community to access online services, little benefit will be derived from GEMSD.

Presently there is a trend to use contestability and marketisation in GEMSD. Also the use of private or outsourced-contracts to provide better service saturation and greater efficiency. McDonough (2000) argues Governments are not in the business of ICT, or communications carrier. The reason for outsourcing is the underlying premise that competition results in improved benefits such as better efficiency, higher quality of service and greater distribution, at the same time increasing costs within the public sector. The process of outsourcing is seen as providing value for every public dollar spent (Anonymous 2000). Lee and Ben-Natan (2002) suggest with outsourcing comes the responsibility of Service Level Agreements (SLA) and ensuring the public interest is not breached by poor service, service damage or manipulation.

2.8.2 Integrity of Data

Issues of trust, privacy and data accuracy are relevant concerns of GEMSD practitioners and customers alike. In the higher stages of GEMSD evolution the need for transaction and secure data standards increase accordingly as suggested by Kumar and Best (2006), Valdez (2002), Davida and Frankel (2001). In 1969 Zelman Cowan noted about privacy:

‘A man without privacy is a man without dignity; the fear that Big Brother is watching and listening threatens the freedom of the individual no less than the prison bars’(Cowan 1969)

Because of the origins of GEMSD and the evolution from scattered databases governments are often required to ‘sweep’ databases or ‘mine’ information to be used in servicing GEMSD clients, particularly in a cross-jurisdictional enquiry. This can cause problems with multiple indexes for the same individual or entity. Similarly, Traummuller and Lenk (2002) suggest different levels of public administration may reference data differently thereby creating anomalies in new data sets or images. In a whole-of-government approach to GEMSD these issues must be addressed to preserve data integrity and promote trust and the right to privacy. The Australian Commissioner for privacy, Karen Curtis (2006), cites information privacy as ‘Information or an opinion [...] about an individual whose identity is apparent, or can

be reasonably ascertained, from the information or opinion.’ Curtis also cites Banisar of the Electronic Privacy Information Centre further suggesting that information privacy requires rules for the handling of personal information. In contrast Sevilla (2006) is concerned almost alarmist about mobile applications and the lack of security in the area of mobile computing in government.

Bittinger of the Gartner group suggest governments must clearly explain data and information practices to the public before collecting personal information. This includes what information is collected, how it will be used and whether or not it will be disclosed. The policy should clearly describe the value proposition behind it, explaining how the public can benefit from the ways that government uses their data suggests Valdez (2002). Having gained the trust of the users it is important to ensure no breaches of this won trust occur. There is a fine line between privacy and public accountability, particularly in areas such as health and justice (Pandiani, Banks et al. 1998). West’s work (2002), (2008) contends the risks of hackers, cyber-attacks, and compromised security or fraud, indicates a real need for continuing advancement in these areas. Technologies such as digital signatures are a step in the right direction for transactional-based services, however more efforts are required to maintain the integrity of data according to Rassler (2008), and Ockenfeld (2002).

2.8.3 Service transparency and civil liberty

There is a fine distinction between public record and the protection of civil rights of the individual or corporation. Australia and Victoria have been particularly vigilant in relation to privacy adherence according to West (2002), (2008). In his 2002 examination of privacy policies on government portals he declared that all Australian portals had privacy statements on each site and were ranked number 1 worldwide in this area. Singapore was ranked 9th, and Finland was ranked lower than 25th.

Oppenheim suggests that public administrations need to ensure that citizens and enterprises have trust in GEMSD. He contends that privacy and security issues must be of a significant proportion to win customer trust. Similarly governments should also include measures to ensure greater openness and citizens' involvement such as the participation by users in the EU and national administrations' regulatory processes suggests Oppenheim (2002). Recent data from Vijayan (2008) would indicate there is a real need to substantiate government trust with many US government agencies

performing poorly in the 2008 congress information security report alleging a growing skepticism amongst citizens and business.

The Gartner group who recommends governments need to clearly explain information practices to the public before collecting personal information supports the secure view. This includes which information is collected, how it is to be used and whether or not it will be disclosed. To encourage constituents to use the GEMSD Valdez (2002) uses the Gartner group suggestion that the policy should also clearly describe the value proposition behind it, by explaining how the public can benefit from the ways that government uses their data. Citizens must also be given options with respect to whether and how personal information collected from them may be used. Whilst many governments and states make use of individual identification cards, numbers such as those in Singapore Finland. Ressler (2008) argues that in many other countries, it is not always available under country specific legislation and freedom of rights bills. This is the same in Australia as Curtis (2006) notes the information collection procedures and transparency of this are fundamental to success but are limited by methods of identification.

Furthermore, citizens must be able to view data collected about them and, if necessary, contest its accuracy and completeness. Governments and enterprises must also take reasonable steps to ensure that consumer data is accurate and protected from unauthorized use by internal and external sources according to the Gartner group, Valdez (2002), and Raul (2002).

2.8.4 Changing technology

Stability of service as outlined in section 2.8.1 is important to governments providing GEMSD to entice users to utilise its services. Similarly it is important to provide a stable interface platform for customers. Too many evolutions of interfaces such as portal presentation, multiple agency formats and information layouts makes GEMSD unattractive to potential users.

Ockenfeld (2002) agrees with Lobue (1999) with this concept and expands by suggesting that from a technical view, it is necessary to utilise future-proof standard tools for their use in legally binding business transactions, and to evaluate their usefulness in terms of user compatibility. Furthermore, all developments should comply with standards and an open-system philosophy, in order to guarantee efficient

extensibility, adaptability and reuse. Also it is suggested, where possible for legacy systems to meet these requirements particularly in relation to security of service and data.

In like manner if governments become too prescriptive in their technology requirements for customers to access GEMSD it places an unequitable burden on users having to invest in new equipment and software continually to comply with government interfaces and only serves to extend the digital divide as referred to in section 2.6.1. Alternatively Trimi and Hong (2008) would argue the evolution of technologies is probably the best way forward citing the use of mobile computing in government as be the best solution to overcome Internet connectivity problems and digital divide issues faced by numerous e-government applications.

The fine balance between maintaining maximum access, and therefore older technologies, and changing technologies to improve service standards is a challenge for whole-of-government GEMSD.

2.8.5 Data storage and retrieval

The cost of re-engineering government services to fit the whole-of-government or cross-jurisdictional service delivery goal is extensive according to Abie, Foyn et al. (2004). To bureaucrats it is the fear of budget and resource adjustment, to government customers it is the perceived loss of direct contact with departments or agencies and to government financiers it is the budgetary concept of wholesale legacy system upgrades within government departments or agencies.

However Adam, Price et al. (2005) suggest in most projects these fears have been countered with practical solutions. In Victoria, Singapore and Finland the practice has been to retain existing ownership of information within the different government bodies. This in the immediate term allays many concerns of bureaucrats, customers and financiers. Technologies employed by governments have been to sweep existing data storage facilities for the information required. Some of the more advanced countries create new images of this swept data and store it for day-to-day use and interrogation, in this case Sibley (2001) quotes Drost suggesting 'The technology is the easy part,' he says: 'It's breaking down the traditional silos in various governments to allow that very cross-jurisdictional service delivery to citizens.'

As GEMSD evolves it is anticipated that this immediate term situation will vary as more demands are placed on data storage with verification of data source and digital

signature authentications as legal restrictions may preclude multiple storage of security related data. In Finland they are encountering this problem with interoperability issues within the EU. Rekola and Pohjanpalo (2002) argue that validity issues surrounding the correctness of digital signatures will force data storage issues in the near future. Agnieszka and Agnieszka (2006) support this view continuing that government data storage and interoperability formats will have to be standardised if their GEMSD initiatives are to be successful in the long term. Also further developments of higher evolution GEMSD are dependant upon secure services particularly in relation to transactional interface with governments. Issues of privacy, digital signatures and older technologies are considerations in the success of GEMSD projects or initiatives. The next section discusses the cost factors of successful GEMSD models.

2.9 Cost

In the GEMSD sense, cost is not only the return on investment or the auditability and benchmarking, it incorporates the factors effecting or impacting on the service and the opportunity for alternative investment or public and private sector partnerships. The potential benefits of well-planned GEMSD projects have long been recognised by governments. Many viewing it, including Wang, Wang et al. (2007), Poostchi (2004), Pullen (2002) and Csuahaj-Varjú (2002) interpret it as a catalyst for future service initiatives, and eventually paying dividends for the sizable up-front investment by the public. An important aspect of good government policy as suggested by Stenbacka and Tomback (1995) is the questioned 'how government policy and delivery of services affect the economy'. Therefore it is important and incorporate broader considerations for the jurisdictional policy, government re-organisation and cost.

2.9.1 Public and private co-operation

NPM, GEMSD, E-government and M-government are part of government's role of governance. This is primary task of government, as Hazell and Doig (2001) state it is important for governments not to become ICT companies or carriers, however governments should fully utilise and harness the skills and infrastructure available in the private sector to achieve their core role of governance. Similarly Lamont (2002) argues that governments are like any other large enterprise and need to maximize productivity and reduce costs through efficient business practices.

Public Partnerships refers to the partnerships created with government by private and community groups in establishing and operating GEMSD projects. Issues confronted in this arena include:

- What are the abilities of Private and Community bodies in establishing and maintaining areas of GEMSD?
- Does the public trust the government in implementing effective solutions conceived in the private or community sectors?
- Is there a conflict of interest or opposition from parties that may compete with the government in provision of certain services?

According to Dietz (2005) it is possible to learn many lessons from the private sector in using eCommerce methodologies. However, there are many of the services that are provided by monopoly agencies, and are non-commercial by nature requiring a different approach to cost and pay-back methods. Under various governments' social policies or mandates these service must be delivered subsidised by governments. Also Eaton, Akbiyikli et al. (2006) conclude that a large amount of the 'innovations' claimed by many PPPs (Public Private Partnerships) are often unrealised in effect. Alternatively some transaction item or business services delivered by governments can be costed on a user-pays basis avoiding the need for innovation just replacement of traditional service with a GEMSD-based PPP. However it is important that original and relevant methodologies be used to distinguish GEMSD implementations from private sector eCommerce projects. The methodologies differ from implementation to implementation, however the need to deliver these government idiosyncratic services produces a commonality between GEMSD projects globally according to Wright (1999).

Inherent to transactional methodologies are the differing operational strategies. Timbrell, Hirschheim et al. (1998) see a commonality emerging between projects is the privatising or outsourcing of GEMSD components. A simple example from Evans (1998) is the use of private or public networks to carry information to all service areas. A more extreme example cited by Wright (1999) is to sell government owned infrastructure components to private sector operators and contract-back third party operation for services and delivery. A third scenario encountered, is the Joint

venture methodology enabling governments to limit their liability by partnering with private sector vendors in development of specific GEMSD delivery of service.

Natran, Brennan et al. (2000) cite the Canadian experience where decisions were made for the public sector to 'go it alone' approach and cited three main reasons in the 'Iac Carling IV'. Several partnering lessons have been learned by Canada's GEMSD pioneers. These are categorised as follows:

- Only partner with value adding partnerships and avoid those who only want to resell government transaction without adding new value. The Canadian experience suggests that technological progress will pit governments against a partner who 'stands still'. It may be possible, such a partner will accuse you of unfairly competing with them in the provision of own service. This is the case in the Victorian experience in the Department of Sustainability and Environment. Technological advances in digital mapping have created imbalances in partner relationships.
- It is preferable to seek partners with related information requirements or complimentary transactions to a shared client and explore if government compliance can become a by-product of e-business. This partnering criterion will highlight opportunities for future bundling of related transactions that will enhance customer care.
- Seek partners who already have a trusted relationship with your shared client because they may be leveraged to reduce your customer service costs while extending your program reach.
- Partners who own or are building high quality infrastructure for service delivery are should attract a preferred partnership status
- In an attempt to recover cost partners who are willing to share government risk, who are willing to buy down public sector initial capital costs on a joint faith in downstream success are preferred partners.

Whilst there is a strong case to partner with the private sector, community groups or stakeholder entities, it is generally accepted that Public Key Infrastructure (PKI) must be the domain of government. In particular it is the areas of emergency services, health and education that draw most comment against joint or outsourced ventures. Customer confidence, accountability and service levels are amongst the common areas of questioning.

2.9.2 Investment and return

The needs of government and business are somewhat similar argues Holmes (2001). Both need a Return On Investment (ROI). For companies, this principally means revenues. However for government under NPM, this translates to efficient, reliable, robust services and a reinvestment of a share of revenues, and increased legitimacy and trust from citizens. Cresswell, Burke et al. (2006) concluded that in assessing ROI in government GEMSD initiatives, two streams of thought must be considered: public value or delivering benefits to users; and the value of government itself by increasing the value of government through technology.

In turn, for officials, this means receiving support, training as well as professional opportunities and rewards for successful adoption of new procedures, work practices and responsibilities. This support of government officials is important to reduce ‘brain drain’ with officials leaving government and moving to a more lucrative positions in the private sector according to Holmes, Nitro et al. (2002), and Bingham and Thomas (1998). Alternatively Garcia (1995) argues that benefits of a fully integrated GEMSD will remove the need for intermediaries in government and streamline practices resulting areas of redundancy such as duplicated work areas. d’Auray (2002) supports this argument with the Canadian experience wherein a simple use of shared administrative systems, the Shared Systems Program, achieved some amazing results reducing the number of Canadian administrative systems from 140 to 14.

In a study conducted by the Australian National Office of the Information Economy (NOIE), Pullen (2002) concludes that GEMSD provides enormous opportunities to government, individuals and business. In particular GEMSD presents ways for government to more efficiently and effectively deliver services to its clients, simultaneously providing savings. This return on investment provides the impetus for increased levels of investment to harness the potential ongoing benefits for both citizens and government.

2.9.3 Environmental variation and external influences

Leaders, supporters and resisters of public service reform are all contributing factors to the success of public projects and initiatives such as GEMSD. In theory, democratic and socialist governments operate on a principal-agent framework, in which citizens are the principals over political policy-makers as their agents, and policy-makers are the principals over public service officials as their agents says Batley (2004). However in a number of countries considering or implementing GEMSD there are a variety of external as well as internal factors that complicate or enhance the process. A simple example could be a developing country's external complication with international financial institutions (World Bank, Asia Development Bank) or donor (Other country development funds) dependence. Other internal factors can include change of government, or government imperative during the course of a project. This was the case in the Victorian experience with the initial political champion, (then Treasurer Alan Stockdale), losing an election and a new government coming to office mid-project. This internal factor slowed the process of GEMSD implementation and evolution for a period of approximately one year until a new political mandate was launched under the new government's banner. The other obvious external factors are natural disasters such as the tsunami in April 2005 or world economic downturn such as the recession being experienced by many governments and countries at the time of this study according to Hurdle (2008). More subtle environmental considerations include diverse cultural and religious influences which Schuppan (2009) highlights such as those that can exist in areas such as sub-Saharan-Africa, the middle-East and other ethnocentric centres.

The regulation and accountability in GEMSD boards on a number of areas: telecommunications; taxation; civil liberty; and justice to name a few. Formal regulation of these interfacing bodies poses regulatory labyrinth. Buckley (2003) argues that unlike the private sector, profit motivation has little relevance in the public sector. The homogeneity of customers, definability of tasks and measurable outcomes serve as more likely conditions of success in GEMSD. Further she contends there is evidence that GEMSD has greater potential for success in public sector tasks that have low or limited levels of complexity and therefore limited intervention and greater autonomy.

2.9.4 Audit-ability and impartiality

Rodgers (2006) of the Australian Securities and Investment Commission (ASIC) raises three issues in relation to regulation audit-ability and impartiality. He contends making our approach and processes more transparent and accessible, making publications clearer and easier to find, reducing duplication and overlap, and better understanding the impact of what we do in government. In support of this Pullen (2002) and Welch and Wong (2001) add that government reporting provides the basis for the inclusion of the audit and regulation in any initiative.

Further Eifert and Pèuschel (2004) and Margetts and Dunleavy (2002) offer the building framework for regulation and a cohesive government approach from studies of seven countries involved in electronic government and legislation for its success and a report the British National Audit Office (2002), suggesting that in the whole-of-government approach there was scope for a single audit trail in GEMSD projects and initiatives providing ‘that regulations are observed and that general principles of good administration and sound financial management are followed in the activities it audits.’

2.9.5 Benchmarking and continuous audit

According to APQC – The International Benchmarking Clearinghouse, benchmarking is about objective analysis to measure the gap between best practice and current performance. Therefore benchmarking is an improvement tool. ‘identifying, understanding and adapting outstanding practices from organizations anywhere in the world, to help an organization to improve its performance.’

Similarly the Australian National Audit Office (ANAO) (1999) recommended in its audit of electronic service delivery including internet, that agencies should build into the planning of their GEMSD a benchmarking and review of performance factor to enhance service delivery across government. This need for benchmarking and performance review is not specific to the public sector.

Common eCommerce problems experienced in the private sector include traffic congestion and site failure. Venetis (1999) suggests that proper planning can eliminate many of the pitfalls experienced by private sector uncontrolled growth. Pre-implementation benchmarking and monitoring for GEMSD projects requires practitioners to accumulate benchmark tests for major government services using

existing delivery mechanisms to provide empirical data for comparison. This data provides guidelines for maintaining optimisation as conditions change and projects are deployed.

Kouzmin, Klages et al. (1999) would argue that given the prevailing emphasis on agency performance, customer focus, stakeholder's interests and other methods of assessment under new public administration, administrative practitioners have taken to benchmarking as an instrument for assessing organizational performance and for facilitating change management. Further, the introduction of benchmarking into the public sector is still in its early stages. Technical problems, scepticism about usefulness and the appropriateness of transferring private sector competencies in public administration are still strong. However, it is argued that more frequent benchmarking of services can overcome the issues. Graafland-Essers, Etedgui et al. (2003) contend that regular statistical indicator benchmarking in information systems can overcome the historical annual audit scenario and improve government service delivery. Also Wauters (2006) work on benchmarking in the European Union supports this stance and continues that only the 'hard' ones which are decentralised and do not benchmark have not yet reaped the rewards available under GEMSD benchmarking.

The potential benefits of well-planned GEMSD projects have costs and responsibilities attached for successful implementation and return. Funding cost recovery, regulation and audit or benchmarking is identified as considerable factors in the process of successful GEMSD.

2.10 Access

Other than operating environment issues and risk factors like security violation and malicious conduct, there are technical issues to be considered in a successful model. One of the major socio-technological issues of GEMSD is in the change from traditional government service delivery to GEMSD, issues of technology and the management of technology are crucial to successful and complete electronic service coverage to the community. The deployment of services has several integral components according to Posfai and Fejer (2008), Heeks (2006), Benaroch and Kauffman (1999). Paradi and Ghazarian-Rock (1997), and Venetis (1999), list one of the most popular methods of technology deployments used by overseas governments

and retail operators as the kiosk outlet where outlets are offered in shopping centres, malls and public areas. Bertot, McClure et al. (2008), Burgess (2006) and Ruissalo (2004) extend this list of deployment methods to governments with the use of public infrastructure facilities such as government libraries. The kiosk methods have been particularly evident in banking and financial industries and are being implemented by governments such as Victoria, Ontario Finland and the US Federal Government. But prior to establishing outlets like kiosk, internet or mobile GEMSD services, deployment issues such as third party operation, outsourcing of carriers, future service development, service level agreements, availability and accessibility of services must be addressed. Smith's (2004) work on mobile models defines and addresses the challenges confronted in deploying new technologies particularly mobile computing. This was expanded by Peinel, Rose et al (2005) and Abramowicz and Bassara et al (2006) to include technical issues to be addressed for successful GEMSD. Also it is necessary for governments to reach all constituents regardless of geographical proximity or ability to interact with technological delivery mechanism. This is particularly relevant in two-way transactions such as utility service monitoring and remote facility management.

In the study of 'The user perspective' on GEMSD conducted by the centre for international research on communication and information technologies (CIRCIT), researchers Singh, Ryan et al (2001) identified that in Victoria and other Australian states the kiosk approach to GEMSD such as Victoria's MAXI project was not greatly accepted.

This still leaves the problem of access, equitable availability to GEMSD for all users private and public. A suitable definition of access must encompass government users who live in rural and remote parts of the country; people with low literacy issues; customers without connectivity at home or work; and, citizens with disabilities. d'Auray (2002) argues in all cases, technology and how governments utilise its features, offers enormous potential to improve equality of access to GEMSD.

2.10.1 Geographical limitation

The term Digital Divide has been used to describe the social implications of unequal access to information and communications technologies and to the acquisition of the skills necessary for full inclusion according to Huta (2002). However there is a more fundamental inhibitor to full participation in GEMSD, namely geographical

limitation. Rennie (2002) suggests that for many countries with either large geographical boundaries or poor infrastructure the problem of geographical limitation occurs.

Remote access can include areas, which already have dial-up access to services, but cannot fully participate in the privileges of full GEMSD due to limited bandwidth or no access to broadband facilities either via landline, wireless or satellite coverage.

The facilities can offer better service delivery with services such as education, health imaging, teleconferencing to name a few according to Xavier (2003).

Governments designing and implementing GEMSD must intervene and attempt to provide infrastructure to accommodate these users whether it be through publicly owned facilities, contracted companies or joint ventures says Ryan (2002). Burgess (2006) contends that the most efficient method is to use existing infrastructure in the form of the public library facilities to educate, familiarise and encourage participation in GEMSD. Technologies including satellite, wireless, microwave, and fibre optic are available to carry suitable bandwidth to remote users and should be exploited to provide optimum GEMSD according to Rajora (2000), and Ryan (2002). Dietz (2005) and Lallana (2004) contend that this is more difficult in relation to the m-Government component of GEMSD, however it would appear that the same issues are relevant to both service mechanisms under GEMSD.

2.10.2 Ability to access

One of the goals of GEMSD is to create an access and a content that is perceivable, operable and understandable by the broadest possible range of citizens and compatible with the widest range of technologies, now and in the future. According to Liff (2000) and the Finish experience, the basic principles are expressed in the four guidelines:

- Perceivable. Ensure that all content can be presented in form(s) that can be perceived by any user - except those aspects of the content that cannot be expressed in words.
- Operable. Ensure that the interface elements in the content are operable by any user.
- Understandable. Make it as easy as possible to understand the content and controls.

- Robust. Use GEMSD technologies that maximise the ability of the content to work with current and future accessibility technologies and user agents.

Accessible GEMSD content benefits a variety of people, not just people with disabilities. In the physical world, ramps are used by bicycles, people pushing strollers, and people in wheelchairs. Similarly, accessible GEMSD content is beneficial to a variety of people with and without disabilities. For example, people who are temporarily operating under constrained conditions like operating in a noisy environment where they can not hear well at all, or driving their car where their eyes are busy would benefit from an accessible site. Likewise, a search engine can find a famous quote in a movie if the movie is captioned. Policy interventions are often necessary to enable wider access. These can be categorized in three main groups. First there are those which aim to address the economic barriers to take up such as, in the UK M2 Communications (2002), pressure on providers to reduce the cost of local telephone calls and subsidies to reduce the cost of computer purchase for some occupational groups.

Second it is expected that ability to access the Internet via existing technologies, particularly televisions and mobile telephones as suggested by Sipilä (2004), will address barriers, which centre on resistance to purchasing or using computers. Nurmela, Parjo et al. (2003) would argue that policy measures here have focused on establishing the necessary infrastructure and regulatory frameworks such as in Finland. Many governments worldwide are rapidly improving their e-service delivery. In the Asia/Pacific region, national governments are developing strategies for community e-centres or tele-cottages in rural areas, which are being deployed at a rapid rate. In these community e-centres it is possible for those constituents with inabilities to access services can be assisted to learn and develop skills and alternate ways of accessing GEMSD services Anonymous (2007).

Finally it is recognised that despite intervention in these areas, there will still remain sections of the community who will not have their own Internet access in the short to medium term. Because of this absence there will remain a need for public access provision, particularly in deprived communities. According to Geiselhart, Griffiths et al. (2003) and Sivakumar (2000) The intention is that this should be provided primarily through existing institutions such as libraries and colleges, but support

should be given to community facilities in less conventional settings particularly for the provision of basic ICT training and equipment use. It is worth noting that in West's (2008) study of world government's GEMSD offerings only 16% of 198 countries surveyed offered some form of access for disabled persons.

2.10.3 Transitional constituents

Whilst many constituents are domicile in the political and geographical confines of the government there are others who reside outside of the government boundaries. This can occur for reasons of employment, travel, taxation benefit, or political choice. In Finland's experience Reinhard (2002) suggests the introduction of the European Union (EU) is particularly relevant with redefinition of government service boundaries. The ability to forge a heterogeneous GEMSD for EU has posed many operational challenges for government practitioners. Panopoulou Tambouris et al (2008) suggested in their work on e-participation that regardless of location governments must address the requirements of all users including the ability to navigate across varying levels of government easily. Reinhard also suggests providing mobile access to one-stop government, which is secure and inspires user confidence, and at the same time satisfies European data protection laws is a formidable task. Similarly it must be user friendly and contain the basic requirements for services such as citizen process orientation, context-sensitivity and context-transparency, and service delivery without paper documents (on demand). Further Reinhardt recommends that GEMSD architectures should allow for integration with commercial services for better service delivery across a broader range of access points. Directories have evolved to assist distance users access GEMSD. Reference material such as Gstalder and Notess (2001) offer comprehensive referencing points and methods however these are not plentiful at present and are yet to be focused on a customer centric approach as offered by Dorris (2007).

2.11 Conclusions

Governments have always endured service change resulting from a variety of external and internal factors such as, political climate, war, famine, and instability. Progress in technologies is yet another influence, which has dictated the way governments do business and the delivery of services to constituents. Pullen (2002) states that since the early 1990's governments around the world have been involved in the process of

designing and implementing GEMSD to take advantage of this change and harness the benefits it can deliver. Similarly users of government services have become aware of the importance of computers in dealing with governments. Indeed it impacts on the social, political and economic interface with government according to Huta (2002) and is a significant area of research.

Also the literature has revealed that there are six major areas of concern in delivering successful GEMSD. In furthering the body of knowledge from the extensive literature review and to bridge an identified gap in GEMSD research, these six areas of significance have been grouped accordingly as:

- Business re-engineering;
- Education;
- Acceptance;
- Security;
- Cost;
- Access

The following chapter describes and delineates these six areas of significance in the model derived from the literature reviewed in chapter 2. Further it draws together elements critical to a GEMSD success factors model.

CHAPTER 3

GEMSD MODEL

3.1 Introduction

Having extensively reviewed the relevant literature, the next task is to fully develop the model derived from the concepts and initial success factors model identified in the literature. As part of the contribution to the body of GEMSD knowledge, these factors will be further categorised and grouped into Areas Of Significance (AOS) ready for testing through subsequent interviews, comparison and analysis. This chapter presents a model of success factors for GEMSD that illustrates the inhibitors and success factors within government initiatives.

The approach adopted in developing the model considers success from a government policy perspective, that is, government electronic and mobile service delivery will be successful if it provides services that best meet identified needs of society, at the least cost. The model design was derived from recurring concepts of government electronic and mobile project success as identified in the literature review.

The structure and format of the model is important. It is considered that the model itself should be understandable, logical, easy to use, and relevant across different jurisdictions and agencies, capable of testing through interviews, adaptive and capable of transcending the fluctuations of evolving technology and external/internal jurisdictional change. In developing the model, compliance with these needs has been taken into account. Also given these parameters the model is presented in a hierarchical format by providing a high-level overview then broken down into six manageable Areas of Significance (AOS), and in-turn into more detailed success factors and inhibitors. Finally it presents relationships between the AOS and the component success or inhibitor factors denominated 'domains'.

The extensive examination of the literature in chapter 2 enabled the broad categorisation of six AOS with a number of identifiable factors either promoting success or inhibiting success of a GEMSD projects. These factors have been refined

into twenty-eight factors in either, a project at inception, or in reviewing the efficacy of systems that have already been implemented.

In developing a model to meet the varying phases of GEMSD, and to make it adaptable to different jurisdictions, it also needed to be pragmatic, that is, to recognise that it was not practical or feasible to develop a prescriptive list of requirements, all of which must be met to achieve success. Therefore, the format is a series of simple criteria that can be shown to inhibit or promote success, grouped into six AOS that reviewed literature indicated as fundamental to government electronic and mobile service delivery. This chapter draws together these factors, groups them into usable AOS then categorises the individual domains critical to a GEMSD success factors model and presents them in diagrammatic and tabular format depicting the success factor and inhibitors pertinent to each.

3.2 Path to the model

Many scholarly publications have dealt with the process of model development of government and social import. Some, such as Byerly (1969) and Raftery (1995), would suggest it is inevitable in any social research to avoid a modelling process of social phenomena. The study of the GEMSD phenomena is no exception and whilst it would be overly ambitious to attempt to model the entire process, the ability to represent inhibitors and success factors of the process is manageable and contributes to the body of knowledge available by providing these phenomena variables in an organised way within one model.

The model is based on a study of contemporary literature, a review conducted from a variety of respected published books, journals in public management, telecommunications, computing and information systems technology areas, as well as recent authoritative texts on offshore GEMSD studies and implementations including recent conference proceedings. These were considered as suitable references.

Internet search engines including Alta-Vista, Google and Infoseek were utilised to locate relevant and authoritative articles published on the World Wide Web. Use was made of information available from the business and law faculty resource centres via means of CD-ROM based and electronic databases such as PROQUEST, EBSCO, ABI/INFORM and INSPEC.

These varying sources provided a richness of information from a diversity of stakeholders involved in GEMSD projects and initiatives primarily from a government perspective. It enabled information to be studied from computing, public management and regulatory bodies, which assisted greatly in positioning the model from a government policy perspective. From these varying sources it was possible to converge similar information based on topic and theme into usable form and perform a meta-analysis to synthesise data from previous studies into six AOS for GEMSD by incorporating the recurrent themes in literature.

3.2.1 Inhibitor and success factors in the model

Much has been written about government IT project failure, budget ‘blow-outs’ and ‘Red-light’ warning systems as used in the United Kingdom, Canada and Victoria. This model deals with inhibitors and success factors based on the six AOS identified. The model does not indicate failure or ‘blow-outs’, however it suggests that a GEMSD project is less likely to be successful or the project will require extra focus to address known risks if it entails the inhibitors identified by the model. Conversely a GEMSD project is more likely to be successful if it entails those success factors identified.

Essentially GEMSD can be considered an Information Technology (IT) project within the confines of government policy and new public management. Success and failure are relative to the environment or phenomenon. This is usually determined by a consensus of stakeholders in the project or phenomenon. Nelson’s (2005) criteria determines IT project success or failure based on the Standish group’s time, cost and product principal. Essentially there are process related criteria. Time; where the project completed within a prescribed schedule, cost; when the project did not exceed the allocated budget and product; where the project produced a product of acceptable quality and conformed with other product-related specifications, including requirements, usability, ease of use, modifiability, and maintainability.

The other criteria are outcome criteria and can be summarised as usefulness such as when the initiative’s resulting product or service is being used by its target constituencies, learning which results in the project increased stakeholder knowledge and helps to prepare government for future challenges, and value when the project

directly results in improved efficiency and or effectiveness for the government's clients.

3.2.2 GEMSD success and failure

Figure 6 is of Nelson's project success criteria can be diagrammatically seen below:

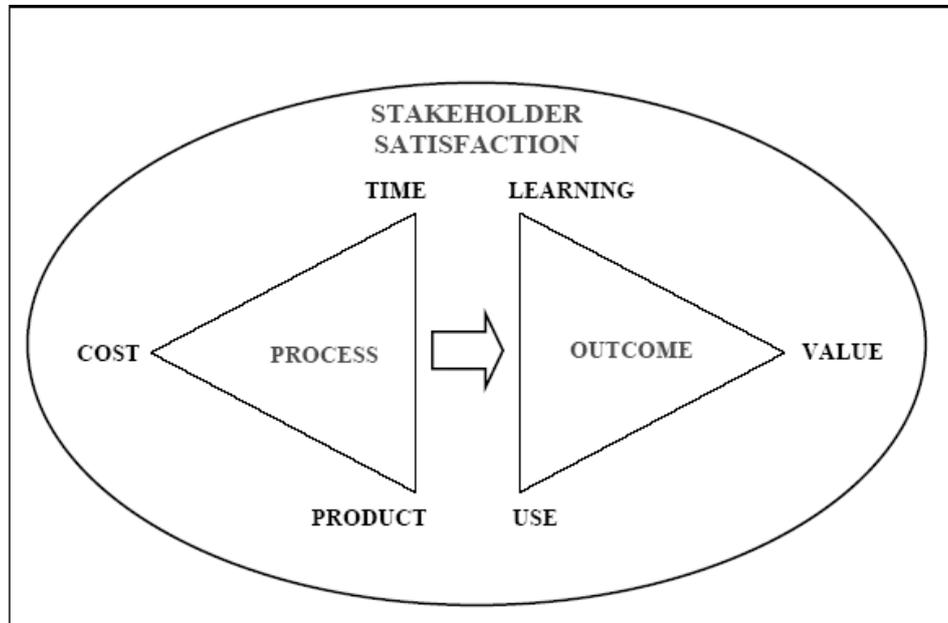


Figure 6 Project success criteria source: R. Ryan Nelson (2005)

In contrast Heeks (2001) attempts to define GEMSD success and failure with three broad definitions:

- *Total failure*: the initiative was never implemented or was implemented but immediately abandoned.
- *Partial failure*: major goals for the initiative were not attained and/or there were significant undesirable outcomes.
- *Success*: most stakeholder groups attained their major goals and did not experience significant undesirable outcomes.

Heeks (2001) uses case study based material to justify these broad definitions. These classifications of success or failure has been expanded by the eGovernment development centre to finally incorporate six levels of classification

- *Total failure*: the initiative was never implemented, was implemented but immediately abandoned, or was implemented but achieved none of its goals.

- *Largely unsuccessful*: some goals were attained but most stakeholder groups did not attain their major goals and/or experienced significant undesirable outcomes.
- *Partial success/partial failure*: some major goals for the initiative were attained but some were not and/or there were some significant undesirable outcomes.
- *Largely successful*: most stakeholder groups attained their major goals and did not experience significant undesirable outcomes.
- *Total success*: all stakeholder groups attained their major goals and did not experience significant undesirable outcomes.
- *Too early to evaluate*: it is too soon after implementation and/or there is too little evidence yet to evaluate the outcome.

Both these measurements of success help guide and direct government practitioners in determining their respective projects or initiatives success or failure and should be used in conjunction with the GEMSD model in assessing undertaking or the efficacy of existing systems.

3.3 Model overview

As the GEMSD success factor modelling process is a theoretical approach to competency building, it is designed to identify and apply the critical success factors to GEMSD initiatives as well as highlighting the inhibitors to success. The process is based upon a set of principles and characteristics, which are uniquely suited to analyse and identify crucial patterns of values, performance and interrelationships at the root of GEMSD. These patterns can be transferred to new GEMSD initiatives, or utilised to enhance existing GEMSD commitments thereby increasing their chances of success.

However in developing a flexible model to meet these differing phases of GEMSD, and to cater for the unique idiosyncrasies of dissimilar jurisdictions, it must be pragmatic in its approach, recognising that it is not feasible, nor practical to develop a prescriptive list of requirements or dictatorial methodology to enable step-by-step GEMSD success. Similarly it does not attempt to weight the ASO according to the phase of the project as this is a subject for future study within the confines of GEMSD. Rather the practical model offers a series of simple criteria that the literature has shown to inhibit or promote success; these criteria are grouped into

logical AOS that the literature review indicated as fundamental or keystones to GEMSD success.

This model is different to general information systems (IS) success models like DeLone and McLean's (2003) revised success model, which primarily deals with system and information quality, user acceptance and eventually organisational impact. Also it differs from Wescott's (2001) e-government theories, which are dependant on the phase of implementation. This GEMSD model is positioned from a whole-of-government policy perspective and it is designed to provide IS services that best meet identified needs of society, at the least cost. Therefore it is more in-line with IS models such as Karlsen, Andersen et al. (2005) work on the characteristics of successful IS initiatives.

The resulting GEMSD model does provide a theoretical approach to GEMSD competency building. The model aims to facilitate recognition of those AOS and component domains that can promote or inhibit GEMSD success. The model is independent of individual jurisdictional complexity, and is detached from the burdens of the project phase. It caters for both e-Government, and m-Government and is not wedded to transient technological boundaries. The resulting model is scalable, and delivers a realistic base-tool useful to those governments or agencies engaged in, or contemplating GEMSD projects, modification or project review.

The logical groupings consistent with the literature reviewed are: cost; business re-engineering; access; security; education and acceptance. These have been ordered by perceived importance and the individual criteria within each logical AOS then again ordered by perceived importance as revealed in the review of literature. This information has then been presented in an overview diagram format which identifies the six AOS of GEMSD as indicated below in Figure 7:

GEMSD six Areas Of Significance



Figure 7 GEMSD model of six AOS

As the AOS evolved from the literature it became evident there was an inter-relation or almost hierarchy of the significant areas. Some predicated the need to go before others whilst some areas were not time dependant but did have a bearing on other more major areas. As an example it was apparent from the literature that government cohesion and reengineering required an authority or mandate to be successful, but the economic reality of cost had to be considered before political commitment could be ratified. With this backdrop the AOS in the model were carefully ordered by any inter-relation and dependency revealed in the literature review. The resulting order identified was: Cost; Business Re-engineering; Access; Security; Education and Acceptance, fortunately it did not form a pleasant acronym and will be identified verbatim, the first being the cost of GEMSD.

The AOS diagram is then broken down into separate diagrams for each AOS depicting the component success factors and component inhibitors to GEMSD in each of the individual AOS, the first of these AOS being business re-engineering.

3.3.1 Government cohesion and the whole-of-government

The AOS relating to business re-engineering and government cohesion drawn from the literature reflected the need for government services not to be performed in isolation, but rather to be reliant on a whole-of-government approach. Five components were identified as promoting the success of GEMSD projects or

initiatives. In the model they are grouped into the AOS identified as business re-engineering.

The components success factors identified by literature to promote a controlled, successful evolution have been incorporated into the initial model, these being represented in the diagram below in Figure 8:

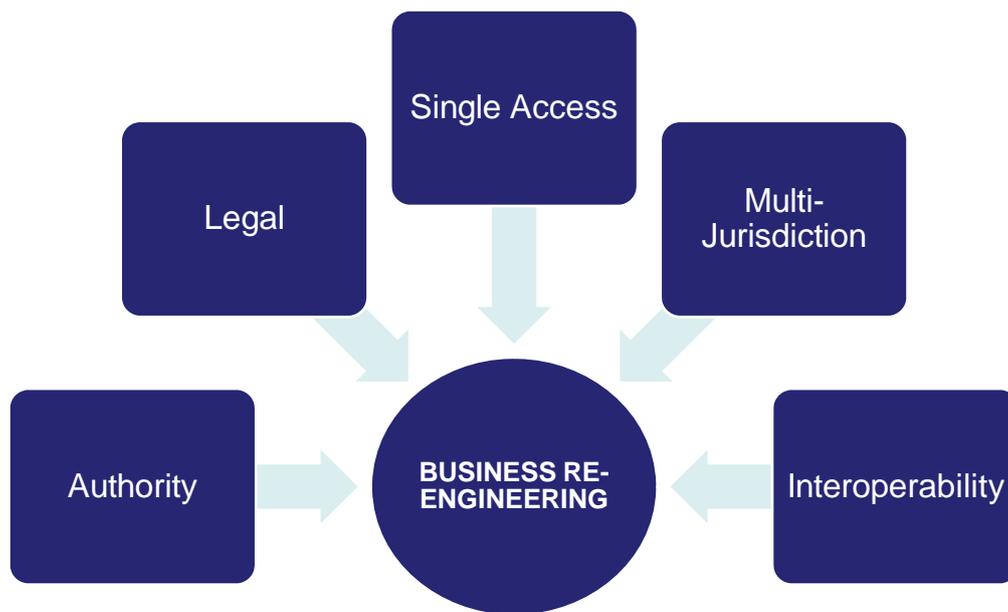


Figure 8 GESD model Business re-engineering AOS

- Authority

The main argument in literature, that authority in GEMSD projects is pivotal, suggests centralised authority and political support is essential to successfully re-engineer the relationship with the public and within government agencies thereby promoting successful initiatives.

The initial model reflects this opinion and suggests failure will ensue if control of initiatives is left fragmented with decentralised control fostering channel rivalry through limited political intervention. The literature supported this position with Riley (1999) contending authority can be achieved through negotiation, however authority must be recognised by all parties for ultimate success.

In this sense the factor to be tested by the model is ‘does centralised authority promote success?’ Alternatively does ‘it inhibit flexibility and generate resistance to change?’

- Legal and regulatory framework

To promote a successful GEMSD framework in which government re-engineering and cohesion can prosper, thereby promoting the success of GEMSD initiatives, requires sound legal and regulatory components. Literature supported this view suggesting that sound legislation facilitates core areas of operation such as legitimising GEMSD contracts both with local and inter-jurisdictional clients. More importantly older legislation does not cater for successful GEMSD, as an example many components refer to only written documents thereby negating the electronic format of service delivery. The incorporation of a conducive legal and regulatory into the model is aimed at testing this theory and its relative importance in government re-engineering for GEMSD. The contention in this success factor is ‘what characteristics are important in the legal and regulatory environment to promote successful GEMSD projects, and what impediments inhibit its success?’

- Single Portal

The ‘one-stop-shop’ or single access portal was promoted by several authors, and is more favourable than individual department or agency access points in the success of GEMSD. This perception is drawn from the literature, particularly Beijing’s experiences of change from eGovernment to mGovernment suggesting single access is almost mandatory. The inference being a single access point to government services portrays the government’s services and information in a well-structured, uniform and easily understood manner, designed to meet the customer’s needs thereby requiring minimal knowledge about the functional fragmentation of the public sector in order to easily use government services. Inclusion in the model to be tested will enable practitioners to rate experiences of single access portals or 'one stop shopping' GEMSD and compare directly with individual department or agency access points. This then facilitates them to build a knowledge base for respective jurisdictions. Ultimately providing a more accurate local assessment, of the success factor hypothesis: ‘is single portal access better than individual department or agency access?’

- Multi jurisdictional policy

The multi jurisdictional policy transfer capability success factor was included in the model due to the apparent globalisation of jurisdictional borders and greater cross-

flow of people, goods, services, and knowledge as defined in the literature. This was amplified by Ontario's economic intention to lure 'the world's best and brightest' to their jurisdiction through the use of GEMSD. Also, their ability to transfer local departmental or agency policy into GEMSD. And the ability for suitable cross-jurisdictional access, or enable government to present the single face to a global constituency.

In this sense the success factor hypothesis being made is: 'is the multi jurisdictional/Departmental nature of GEMSD single access superior to service levels previously provided by individual or separate agencies?'

- Interoperability

The ability to translate these government policies and services from economic and jurisdictional boundary to greater cross-jurisdictional GEMSD services also relied on the technical ability to support such change in a cohesive government environment. The issue of existing or legacy systems and portability of systems necessitated the inclusion in this area of the model of a technical success factor. The key hypothesis in this component success factor is 'Does the introduction of Information and Communication Technologies (ICT) enhance or complicate legacy systems; or should they be kept separate?'

Legacy systems and converting or porting to ICT provided extremes in opinion in the literature. Some literature suggested that cost is the prime driver behind the conversion of legacy systems, whereas others argued that system reliability was paramount and legacy systems were a risk to organizations and agencies and a few believed it will always be difficult.

However the majority of literature reviewed recommended the porting to ICT systems and 'phasing out' legacy systems was seen as advantageous describing it as 'inevitable' and is therefore reflected in the initial GEMSD model.

The next AOS deals with education and the need.

3.3.2 Educating and the need

The transfer of knowledge in any new initiative is a difficult process, perhaps more in technologically based systems. The ability to successfully deliver GEMSD will be

greatly affected by the up-take and understanding of the new delivery mechanisms. This applies equally externally to government customers, as well as internally to employees and contractors. For this reason the inclusion of relevant success factors under the heading of ‘Education’ has been made. According to the literature education can be broken down into five aspects directly relating to inhibitor or success factors affecting GEMSD projects.

They are grouped as follows in Figure 9:

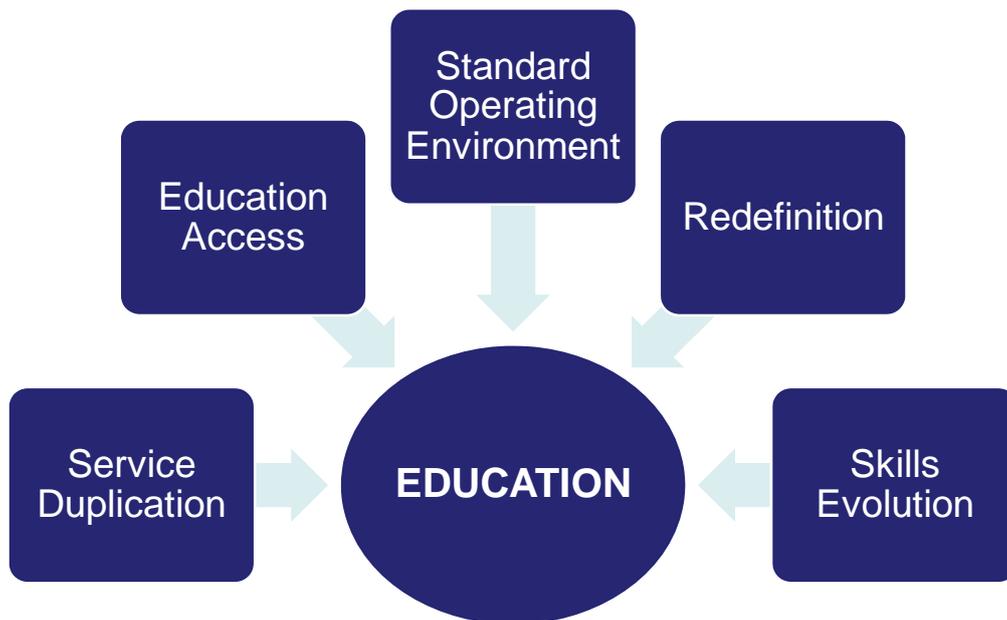


Figure 9 GEMSD model Education AOS

- Service duplication

Literature suggest that to enjoy full inclusion in GEMSD and to develop the full benefits it has to offer, ICT literacy must be common amongst government users and that this literacy will reduce the traditional ‘over-the-counter’ transactions with resources attached to the traditional delivery mechanisms being reallocated or saved with government. The success factor to be included in the model and analysed is, are there any noticeable reductions in fully duplicated service delivery systems with improvements in ICT literacy, implying success of the delivery mechanism. The argument is continued suggesting public service managers need to consider both the barriers to adoption and the benefits of adoption if they are to develop plans to increase the take-up of their electronic services and the ultimate reduction in traditional service delivery and its cost.

- Education access

These services have traditionally been delivered 9.00am -5.00pm Monday to Friday. With GEMSD there is the ability to access services via the internet and mobile service devices 7/24. The success factors model includes the uptake of this extra service ability as an individual component toward overall GEMSD success. Its inclusion is primarily as a measure of uptake and the change in work habits or cultural change acceptance of an electronic and mobile service delivery platform. Also a strong uptake indicates higher levels of GEMSD literacy in and outside the government jurisdiction.

- Standard Operating Environment (SOE)

With this uptake to more service ability from government there is a need for consistency across services to help facilitate confidence, reliability and familiarisation with GEMSD. This is particularly evident in the transition from eGovernment to mGovernment under GEMSD, with many established eGovernment initiatives not readily portable to mGovernment services due to their complexity and departmental or agency idiosyncrasies. The provision of a SOE was seen as an individual success factor to be included in the model. Suggesting that customer acceptance can be influenced by the provision of a standard operating environment, thereby promoting success of the GEMSD project. Mustajärvi of Finland (2002) supported this view citing the problems of technology inhibitors compelling GEMSD providers to maintain a broad range of technology access incorporating older systems with new. Literature continues by suggesting this applies to internal government users as well. Similarly it is suggested that government key public infrastructures (GKPI) must be kept to an accessible standard for all users to view and to promote use and success of GEMSD initiatives.

- Redefinition of service

As part of the move to redefine service, agency specific data and service warehousing are giving way to re-definition of government products and services. With more multi-jurisdictional policy transfer to constituents and traditional silos of information held by departments and agencies are now required to redefine the whole-of-

government face as presented under GEMSD. Posing the question: what effect does this have within government agencies? Whilst few governments can afford the a wholesale change in approach to complete GEMSD data and service warehousing, a rethinking and re-education of government is required in order to achieve a consistent service capable of successful GEMSD and easy customer interface. Authors believe this will take considerable education within governments to occur. As an individual success factor in the model this is seen as an internal government education process necessary to promote success of GEMSD projects.

- Skills evolution

Literature identified skills training in GEMSD as a major factor in successful projects. Suggesting there is always a willingness to spend money on hardware, software, communications and data, but not on the skills, and training necessary to enable people to use technology like GEMSD effectively. How are government users becoming more GEMSD ready and how? Has the introduction of GEMSD altered skill sets of government employees, and has this been successful? In a complete GEMSD model it asks these questions and suggests that successful GEMSD develops new skill sets and improves the ability of government employees in a successful project. Dalton's (1999) work goes into detail to explain this as highlighted in the literature review.

The next AOS within the model deals with the success factors attributed to Acceptance of policy shift to GEMSD.

3.3.3 Acceptance of government policy shift

In any public infrastructure shift such as GEMSD, community up-take, or social engineering of customer usage is crucial to the success of the project and it cannot be assumed that the up-take will be immediate. Individual success factors, which contribute to the acceptance of policy change and provide ability to monitor change, are reflected in the model (Figure 10) as an AOS broken down into the following mutually exclusive success factors:

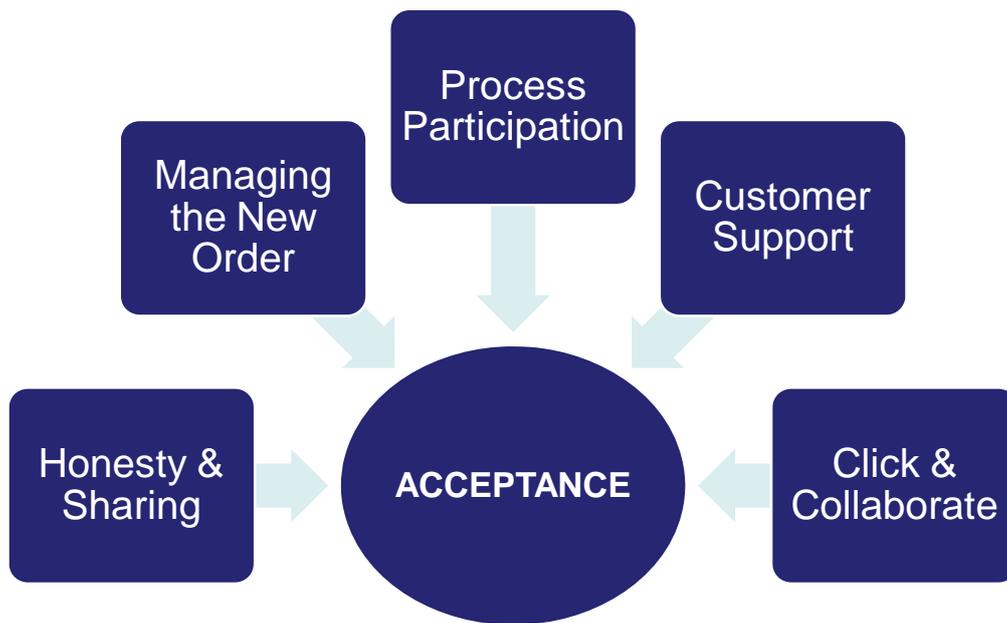


Figure 10 GEMSD model Acceptance AOS

- Honesty and sharing

Similar to audit and financial transparency in the cost AOS is ability to provide an openness and review for GEMSD practice acceptance. The Finish ‘Ottakantta’ system or ‘share your views with us’ system as explained in the literature review is a good example of open review and participation by government users, fostering better acceptance of GEMSD. This openness and ability of self review helps to make GEMSD more transparent and open to review than traditional service delivery methods. Whilst the practices of traditional systems have an element of transparency and honesty they are not as immediate and seldom as accurate in reporting many opportunities for misinterpretation along the process. This inclusion in the model of a success factor which specifically deals with stakeholder transparency and online review is seen as a promoter of GEMSD acceptance.

- Managing the new order

The better management of change and new structure has been singularly identified as a major success factor in GEMSD success. Disputes or areas of demarcation within government agencies, in relation to GEMSD are not uncommon and can often be misinterpreted as ‘turf wars’. The responsiveness of public administration to the changes required to facilitate successful GEMSD need to be carefully managed. The

inclusion of a success factor regarding new order management is considered essential. Steps to ensure process participation across government agencies are an essential qualification for successful projects and implementations.

- Process participation

The appropriate convergence and use of media technologies can have a significant bearing on the overall success of any GEMSD initiative. The introduction of new service delivery mechanisms included in GEMSD is an opportunity to engage with government customers both internally and externally. The inclusion of this factor in the success factors model covers the use and support of media convergence as a necessary factor to gauge, not only process participation and up-take, but also issues of successful support and uniformity across departments and agencies. How do governments manage ‘single portal’ customer relations/support previously serviced directly by different agencies? Singapore’s eCitizen project has achieved this and sets an example for other jurisdictions using a variety of media, both separate and converged in engaging their customers in the process. It is considered worthy of inclusion in the model as a success indicator.

- Click and collaborate

GEMSD offers the concept of ‘click and collaborate’ or instant government accessibility and while most proponents of GEMSD are quick to note the speed and accessibility available under GEMSD and the degree of information available, other opinion believed this was not really the case. After testing of 197 government departments with a simple email West (2008) found delays of up to four days or more inferring that many government services were electronic publications only with little support to entice customers and generate acceptance of GEMSD. This issue has been segregated as an individual success factor of acceptance suggesting government enterprise wide standards need to apply in order to achieve ‘click and collaborate’ or acceptance of GEMSD benefits. The question being: does this really exist or are we really in the ‘take a number’ phase still?

The next AOS deals with government security and privacy within the GEMSD model.

3.3.4 Government security and privacy

The area of the model relating to security deals with five components or individual success factors and questions to be tested for each. The literature has supported the following five factors (Figure 11) deemed to promote success:

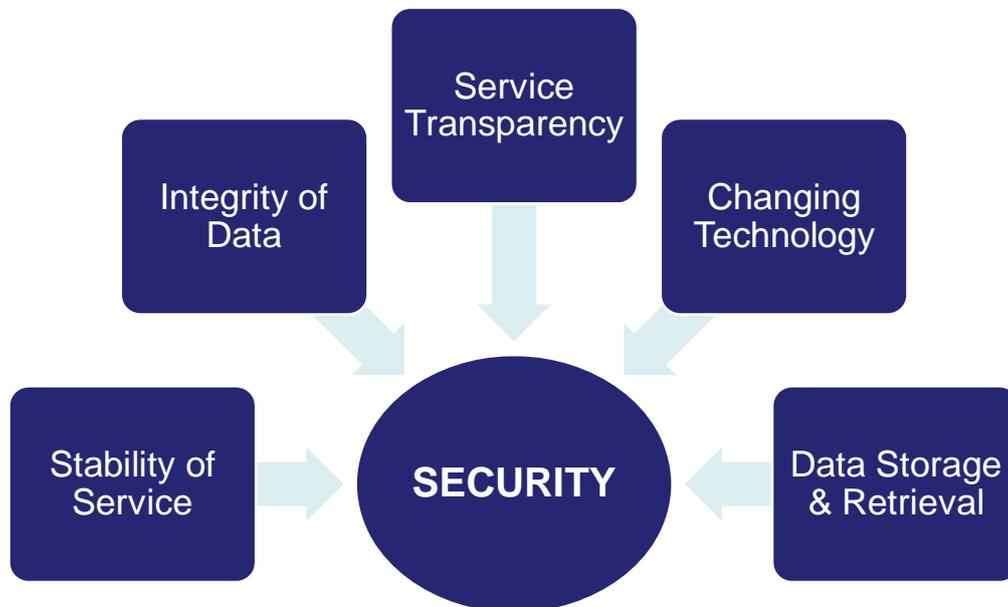


Figure 11 GEMSD model Security AOS

- Stability of service

GEMSD introduces new modes of service delivery and requires a stable infrastructure otherwise little benefit is to be gained by the public. Literature elaborated the need further suggesting that governments should not be in the communications business but should use the private sector specialists to deliver government's services thereby giving a stable communication and service platform. Other authors re-enforced this position by claiming that the lack of consumer trust in the security of the new service mediums, electronic or mobile, could be its undoing. The consensus being: there are known limitations with traditional methods in avoiding malicious or fraudulent damage to data, however stable communications platforms and consistent data integrity should abate many known threats and promote success. Therefore the question to be tested is 'does communications stability and data integrity promote successful GEMSD?'

- Integrity of data

Data integrity and privacy were outlined succinctly by Curtis (2006) in the literature and were very clear suggesting information privacy required rules for the handling of information as compliance under the Australian Privacy Act (1988). The same themes of a rule-based approach to privacy and data integrity were amplified by other authors, and concentrated on fraud through identity theft. The question rising from this success factor to be tested relates to ‘What steps or rules are necessary to minimize identity theft and does this ensure successful GEMSD?’ The inclusion of integrity of data in the model under the security AOS was considered mandatory.

- Service transparency

Likewise the question: ‘are routine transaction audit and transparency in securing GEMSD services a considerable success factor in the success of GEMSD projects?’ This was included as multiple authors subscribed to the belief that governments should clearly explain information practices to their constituents before collecting personal information. Also regular transaction audit should occur as part of a standard regulatory framework to instil confidence in the process and support for the initiative or project. This success factor was seen as a necessary ‘check and balance’ for security and public confidence thereby ensuring success and the lack of this being present would inhibit the likely success.

- Changing technology syndrome

Curtis (2006) said: ‘All businesses selling products or services to the public are subject to consumer protection regulations.’ This applies to government as well. In supporting Curtis’ view on regulation, there is a need to ensure GEMSD compliance irrespective of systems utilised therein, or as part of, the delivery mechanism. Other authors further suggested it should be possible for legacy systems to meet the regulatory requirements particularly in relation to security of service and data. In this sense legacy systems can be defined as obsolete or near obsolete government computer system that may still be in use because their data cannot be changed to newer or standard formats, or their application programs cannot be upgraded easily, generally without considerable additional cost.

The inclusion of this success factor in the model is pivotal on the ability of legacy systems not to impede GEMSD security and being capable of adaptation to future technological changes. The question being, do legacy systems impede security and are there any future proof enhancements that can facilitate successful GEMSD projects?

- Data storage and retrieval

Similarly it has been a historical evolution that individual departments or agencies have been responsible for data storage and security. With the whole-of-government approach outlined in business engineering this becomes an impediment to continuity of service with multiple records being held on the one individual or organization across several databases, often with peculiar idiosyncrasies to be observed. The success factor in question is, ‘what benefits can be delivered from central data warehousing for whole-of-government GEMSD?’

The literature is explicit in this area with many authors supporting this view with others going further contending highly evolved GEMSD systems will force standardisation of data management systems to facilitate the whole-of-government systems required for successful GEMSD and that a failure to achieve this will impede progress or promote failure.

The next AOS within the model deals with the success factors attributed to the cost of government policy.

3.3.5 The Cost of good government policy

As stated in the literature it is necessary to incorporate broader consideration for cost than that of fiscal return or auditability. To develop a complete GEMSD model it is necessary to go beyond the technological and geographical issues and incorporate broader consideration for the jurisdictional policy, government re-organisation and cost. To provide a whole-of-government viewpoint it is necessary to stand back from individual stakeholder perspectives evident in the literature, and assess the model from a public policy perspective. A broader public policy perspective would balance all of the costs and benefits across society as a whole. With this view, the literature reviewed provided a richness of information and supported this view highlighting five

success factors under the general area of cost. This is reflected in the model as an AOS broken down into individual and exclusive factors seen in Figure 12 below:

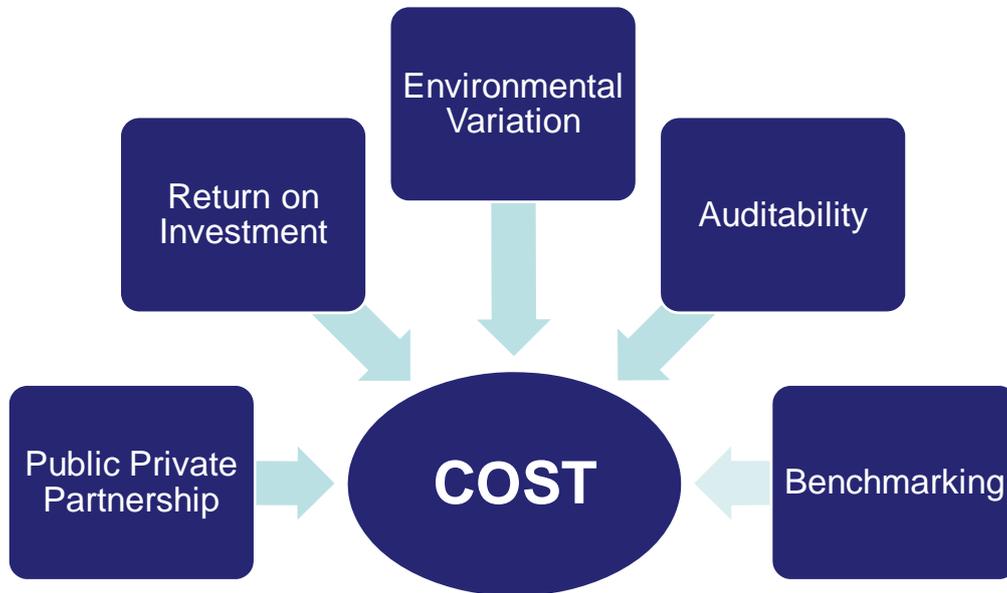


Figure 12 GEMSD model Cost AOS

- Public and private partnership (PPP)

Drawing on concepts from the literature of theory of best practice in new public management, particularly Lamont's views on the need to maximize productivity and reduce costs through efficient business practices in government, it was apparent that successful GEMSD should draw on the expertise and experience of the private sector, at the same time limiting the public's financial exposure by participating in joint ventures or public and private sector co-operation. As such there is a strong trend to remove government from the business of ICT. To what extent government can transfer any costs of GEMSD to the private sector or other funding bodies is still undefined, however some authors such as Wright and Evans (2008) noted that some GEMSD projects should be government funded or kept government only, particularly Public Key Infrastructure (PKI) such as Police, and emergency services. Dietz (2005) argues in relation to m-Government services it may be too hard to transfer some of the traditional e-Government services to immature carriers and inexperienced private GEMSD practitioners.

- Investment and return or cost recovery

The initial investment in GEMSD can be quite high, particularly if governments wish to develop their own infrastructure. As a major premise of NPM it is important to see some cost recovery to offset the initial expenditure in initiatives like GEMSD. Few public managers would enter any change or program without considerable consultation on the ROI. Whilst this is a major issue, literature supports the view that the nature of the unique opportunities GEMSD, technologies and delivery mechanisms offer will excite new avenues of cost recovery and will offer many ways of returning initial investment to government. These vary from greater trading hours with 7/24 operation to wholesaling of information, previously restricted to government, to commercial vendors. The argument around ROI and the initial cost of GEMSD has made it worthy of inclusion in the model as a success factor.

- Environmental variation and external influences

Variation from intended plans and design can cause tremendous change to any project or initiative government or otherwise. Within government there are several influences which can affect the outcome of GEMSD and are divided into two categories environmental variation and external influences. Environmental variation is the shift in paradigm within the government, variation such as changes of political leadership, factional differences and bureaucratic influence. Whereas external influences can include downturn in the economy such as America's 9/11, sub-loan crisis and war commitments which have a flow-on effect to other governments, changes in federal or influencing legislation and other influences such as natural disasters.

- Audibility and impartiality

The inclusion of the single audit trail success factor in the model strengthens the cost AOS and provides another area to assist in delivering GEMSD success posing the questions 'Is there scope for a single audit trail in GEMSD?' In the literature Rodgers' (2006) arguments on effective and transparent processes combined with the views of Pullen (2002) on government reporting provided the basis for the inclusion of the audit and regulation success factor under cost in the GEMSD model. Their views support the question 'What regulatory checks and balances have had to evolve with GEMSD projects?' Implying that good reporting and transparent process will lead to successful initiatives in GEMSD.

In building a framework for regulation and a cohesive government approach Eifert and Pèuschel (2004) offered comparison of seven countries involved in electronic government and legislation for success (Eifert and Pèuschel 2004). Their arguments combined with Margetts and Dunleavy report to the British National Audit Office (2002) also recommended the inclusion of the single audit trail success factor suggesting that in the whole-of-government approach there was scope for a single audit trail in GEMSD projects and initiatives providing these systems were adhered to. Both Rodgers (2006) and Curtis (2006) referred to and supported the reduction of regulatory duplication and overlap through better practice.

- Benchmarking of service

As an issue technical and auditory compliance, and to support the reduction of regulatory duplication, and overlap through better practice, the inclusion of a benchmarking success factor was deemed appropriate. This inclusion of this benchmarking factor raised the question ‘how do governments perform ongoing benchmarking or audit of GEMSD services’ to promote GEMSD success? The suggestions from the literature concluded that benchmarking is an improvement tool, and that annual benchmarking was archaic and ineffective to promote efficiency in GEMSD. This was particularly evident in the work of Graafland-Essers and Ettetdgui (2003) contending more regular statistical indicator benchmarking in information systems can improve government service delivery.

The following AOS within the model deals with the success factors attributed to good government access.

3.3.6 Good Government Access

Many authors in the literature review highlighted issues in relation to access of GEMSD services more particularly in relation to m-Government services. However it appears that the same arguments apply to both e-Government and m-Government respectively. It was strongly suggested that m-Government is a subset of e-Government, it is apparent in this AOS that the success of projects under the GEMSD banner rely on the same success factors. In this AOS they have been grouped under the following individual success factors as seen in Figure 13:

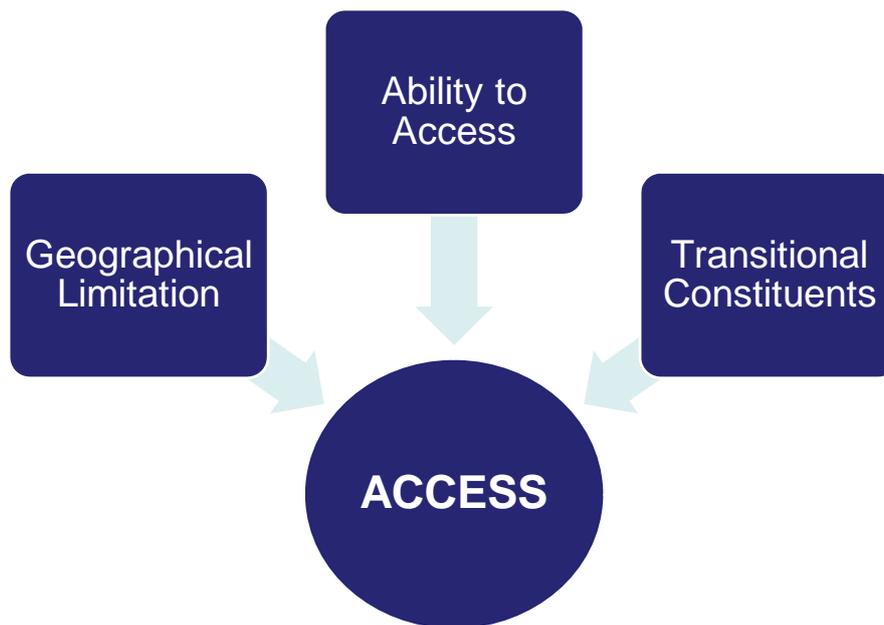


Figure 13 GEMSD model Access AOS

- Geographical limitation

Whilst in disagreement on minor issues of geographical access, most authors conclude remote access is an inhibitor to successful GEMSD. In banking we have seen the use of ATMs change the way customers do banking and drive the evolution of service delivery to most geographical areas. The ability for government to imitate this example and drive the accessibility for constituents is just as possible if not preferred. Is there evidence of a similar shift in customer behaviour for GEMSD projects? The questions being does the improvement in service delivery drive the evolution or are we still limited by geographical constraints?

- Ability to access

However, known impediments to GEMSD success exist where potential customers are disadvantaged through problems such as: geographic location; cost; absence of technology; inability, lack of knowledge, or unwillingness to move to new technology. Authors involved in work on social intervention in e-Governance suggest that community groups can make a significant difference in the success of a project. Others work from the disaster or relief perspective and the use of m-Government initiatives particularly in third world countries such as Bangladesh as a community stakeholder driver for common benefit, suggesting that stakeholder participation can

promote success in GEMSD. The questions being does community group or stakeholder involvement help facilitate better access and ability to access GEMSD?

- Transient constituents

The other area of access success identified in the literature relates to transient and ex-patriot customers. Many suggest that non-domicile constituents and organizations are better serviced by GEMSD than traditional methods. The question being: is there any evidence that GEMSD provides for the needs of transient and ex-patriot customers? This area could fall under the banner of geographically remote however it is usually the case that these members of the government's jurisdiction do have access to technology but not the traditional channels.

The next AOS in the model deals with factors of government security, service stability, information privacy, and data integrity. Also it deals with transparency, technological change and information storage and retrieval.

Whilst the component success factors and component inhibitors to GEMSD in the AOS seem to be distinct and separate there are a number of interdependencies and relationships within the groupings and different AOS. These are discussed in section 3.4.

Each of the AOS as discussed from the literature has generated a number of hypotheses based on component or success factors of each significant area. These individual hypotheses form the basis of the questions to be used at interview in the testing of the initial theoretical model against the GEMSD phenomena experienced in Victoria, and compared with those of Finland, Singapore and comments to be obtained from the World Bank. They will be the basis of testing the model and the individual success factors as proposed in the next chapter, chapter 4.

3.4 Relationships within the model and domains

Thus far the model has depicted the six AOS, and the further breakdown of these six areas into component success factors and inhibitors under each AOS. These sub areas

with an inhibitor or success factor are denominated 'domains.' They represent a grouping of factors that promote or inhibit success in that domain of the AOS. Review of the literature identified relationships which appeared between AOS, and at a lower level between the component domains. Whilst sometimes subtle, these relationships are important to the overall model and provide greater insight into promoting GEMSD success and identifying inhibitors to success. It is important to note that not all domains from the differing AOS have relationships. Across the six AOS there are twenty-eight domains with a potential of five hundred and ten relationships. Of these seventy-three identified from the literature as important. These domain relationships have no weighting applied to their relative importance as this is the subject of future research in the area of GEMSD relationships

The relationships identified from the literature are categorised as both positive and negative. In this sense a positive relationships in this model is one in which the value of both related domains increases. Conversely, a negative relationship in the model can be identified as one in which the value of one domain increase, but the related domain decreases. These types of relationships are depicted in all diagrammatic representations as green for positive and red for negative. Those domains not influenced or related are represented in grey.

A complete matrix is very detailed and difficult to represent clearly in a single diagram. However it does assist understanding of the relationships within the model by using diagrammatic views. In order to make the diagram more manageable, it has been disaggregated into smaller sections based on each of the six AOS, and these provide a useful; alternate view of the relationships. Each of the six diagrams has the domains across the top of the particular AOS being examined, and the related AOS and their respective domains in columns below. These six diagrams are shown and described in the following sections.

3.4.1 Business re-engineering AOS domain relationships

In this area there are twenty relationships with all five other AOS. These are Education, Cost, Access, Security and Acceptance. Of the twenty, eighteen are positive and two are negative, as seen in Figure 14.

Relationships within the GEMSD Model

Business Re-Engineering

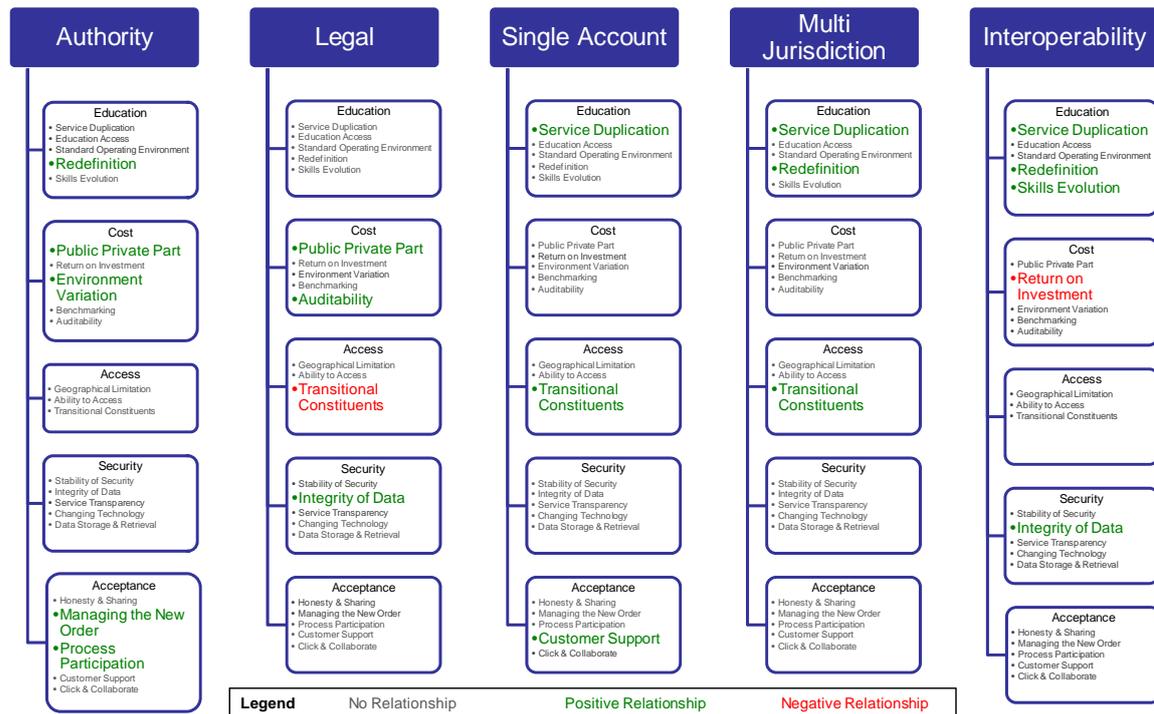


Figure 14 GEMSD model Business re-engineering AOS relationships

In the domain authority, five relationships exist with four AOS in the model. All five are positive relationships with domains: redefinition, private public partnerships, environment variation, managing the new order and process participation.

An increase in the redefinition of products and services across government requires commitment at all levels of government particularly at higher echelons. Literature reveals a strong cultural problem with change management in government with many areas of demarcation and ‘turf-wars’ in relation to GEMSD initiatives. As a result a positive increase in authority such as political champions or higher echelon drive will yield a similar increase of activity in the redefinition domain.

The commitment to enter into public and private sector partnership requires ascent by senior government officials and political empowerment, therefore an increase in authority in this areas will generate a corresponding increase in the public private partnership domain with more ability to negotiate and ratify contractual partnerships. Environmental variation domain within government requires the reduction of internal and external disruption to promote GEMSD success. Whilst little can be done to

reduce external influences of economic change, international and federal legislation or natural disaster, internal influences can be managed with an increase in authority activity. Therefore an increase in authority will generate an increased stability in the environmental variation domain.

Agency relationship management and managing change are fundamental to managing the new order domain. To achieve a positive increase in this domain requires centralised authority with strong political support. Therefore an increase in authority will result in an increased success in managing the new order domain.

A similar positive relationship exists with the process participation domain wherein an increase in centralised authority will lead to an increase in the process participation of government departments, agencies and authorities. This will negate the inhibiting factors of mistrust and 'turf-war' syndrome promoting greater chances of successful GEMSD projects.

Legal domain has four relationships three positive and one negative. The positive relationships exist with public and private partnership, auditability, and integrity of data domains while the negative relationship is with the transient constituent domain. In order to facilitate an increase in public and private partnerships it is necessary to have a comprehensive legal and regulatory infrastructure to support the partnering process therefore an increase in legal domain through greater activity in legislating and regulating for partnering will promote an increase in public and private partnership activity as well.

A cohesive regulatory and legislative infrastructure will support and maintain regular and transparent audit of GEMSD projects promoting overall success. Thus a positive relationship exists between the legal domain and the auditability domain as increases in either domain will generate an increase in the other.

Identity management across government services is paramount for the ensuring data integrity in GEMSD projects. Legal intervention with legislation and regulation to ensure accuracy of data and privacy of information is fundamental to success of GEMSD. A positive relationship exists between the legal domain and integrity of

data domain where an increase in the legal domain will create an increase in the integrity of data domain.

The negative relationship within legal domain is with transient constituent domain wherein an increase in legislation or regulation may create a decrease in the other domain. This relates primarily to cross jurisdictional matters where legislation generated by one government may create a negative effect on other governments or expatriate constituents, the simplest examples being the global village and issues of cross boarder taxation or foreign land ownership.

Single access domain has three positive relationships with domains: service duplication, transient constituent and customer support. An increase in single access domain provides a reduction of duplicated services and therefore a positive influence on the service duplication domain. Also increases in single access portal infrastructure will have a positive influence on transient constituents enabling greater access to services for transient and ex-patriot users providing greater reach and richness of government products and services. Customer support domain is related to single access domain particularly if redefinition of services has occurred. An increase in single access activity will generate an increase in customer support activity based on across government services. Customer support issues can be handled at the single portal access point.

Multi jurisdiction domain shares three positive relationships with the domains: service duplication, redefinition and transient constituents. Like the single access domain the relationships with transient constituent caters for external and temporary inter-relations. The across government nature of multi jurisdiction domain affords ease of use to external and temporary government customers therefore an increase in multi jurisdiction domain will provide an increase in transient constituent domain. In similar context the redefinition of products and services to streamline government provides a natural relationship for multi jurisdiction. The increase in redefinition across government must increase the multi jurisdiction nature of services it brings jurisdictions in line with new products and services defined under GEMSD and is not dependant on the segregation of service by traditional departmental or agency providers. With greater emphasis on reducing service duplication there is a marked

increase in service duplication domain when redundancies of multiple jurisdictions are streamlined with increased importance given to data sharing. Through central data warehousing and similar techniques, redundant silos of information and fixed functional systems give-way to shared facilities relational databases and less duplication or ownership battles.

Interoperability domain has five relationships, four positive and one negative. The four positive are domains: service duplication, redefinition, skills evolution and integrity of data. The negative relationship is with return on investment domain. Interoperability and service duplication relationship is based on a reduction of duplicated services due to better interoperability between technologies and therefore an increase in the efficiency of service duplication domain. Redefinition of products and services can only occur when an increase in interoperability has been achieved. Web, mobile and other multimedia delivery mechanisms require interoperability standards to enable the successful redefinition of products and services across government.

With the advances in interoperability there is an increase in skills evolution within government. The changes from legacy systems to new technologies with increased interoperability afford an increase in evolution of skills with the public sector. Also interoperability procedures will increase a standardisation of skills across government and add to the increase in skills evolution.

The changes that interoperability brings to GEMSD require the use of data across departments and agencies. This increase in shared data and central updating of information leads to a natural increase in the quality of data maintained and a general increase in the integrity of data domain.

The negative relationship in the integrity domain is brought about by the high cost of establishing and maintaining interoperability of quality data, products and services. While experiencing an increase in interoperability it is difficult not to create a decrease in the return on investment domain. The high costs of fashioning: new standards, new technologies and new operating procedures across government comes

with minimal return on vast amounts of capital expenditure by governments during initial setup phases of GEMSD regardless of delivery medium.

3.4.2 Education AOS domain relationships

There are twenty-one relationships within this AOS and the remaining five areas. Of these nineteen are positive and two negative relationships as seen in Figure 15.

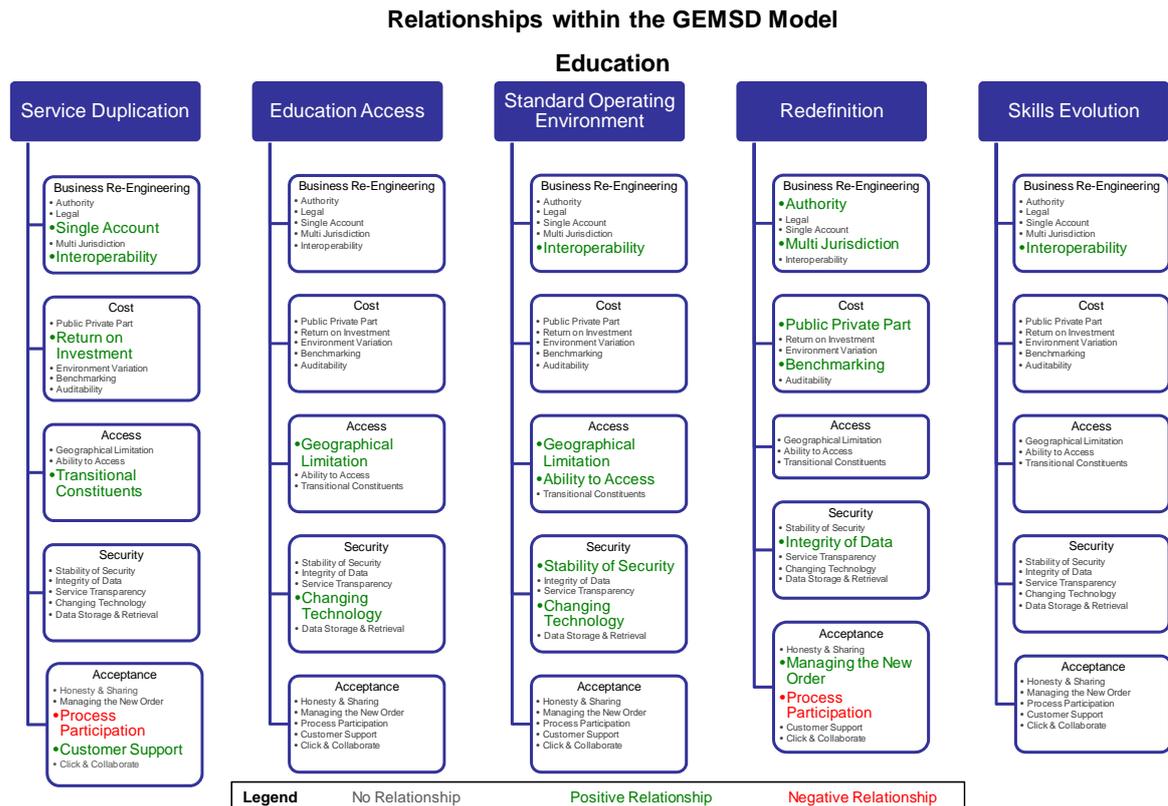


Figure 15 GEMSD model Education AOS relationships

Service duplication has five positive relationships and one negative relationship with domains single access, interoperability, return on investment, transient customers and customer support being positive relationships and process participation the only negative relationship.

An increase in single access domain provides a reduction of duplicated services and therefore an increase in the domain. Interoperability and service duplication relationship is based on a reduction of duplicated services due to better interoperability between technologies and therefore an increase in the efficiency of service duplication domain. With greater emphasis on reducing service duplication

there is a marked increase on the return on investment domain with cost reductions or the reallocation of existing resources to other tasks as traditional over the counter services are reduced. The transient user domain experiences an increase in usage as a corresponding increase occurs in the removal of traditional service duplication and more emphasis is placed on electronic and mobile service delivery methods which in general better cater for transient users in preference to traditional shop-front approach. Customer support domain experiences an increase with an increase in duplicated services as more electronic and mobile avenues become available to support customer enquiries, information retrieval and access on a 7/24 basis. The 7/24 access is classified as a secondary relationship in this situation not a relationship in its own right. The one negative relationship exists with process participation. As service duplication is increased there is a decrease in process participation. This is attributed to cultural issues such as 'turf-wars' and inability to adapt to new technologies.

Education access has relationships with geographical limitations and changing technology domains. Increased activity in education access is seen to excite an increase in service to the geographical domain with increased uptake and identifiable changes in usage patterns by these geographically remote areas. Similarly an increase in changing technology services through better technology with more reach and richness of information is related to an increase in educational access domain.

The standard operating environment holds five positive relationships with domains: interoperability, geographical limitations, ability to access, stability of service and changing technology. The standard operating environment is often determined by the lowest common denominator of service technologies being employed in the whole-of-government GEMSD however it does afford a consistent environment for the delivery of all services. Any increase in SOE will result in increases throughout the five domains listed above as a response to changes in SOE policy and technologies.

Seven domains have relationships with the redefinition domain. Of these six are positive and one negative. The six positive domains are: authority, multi-jurisdiction, public private partnership, benchmarking, integrity of data and managing the new order. Process participation is the only negative relationship.

Increases in authority influences will see a positive increase in the redefinition of services. Literature reveals a strong cultural problem with change management in government with many areas of demarcation and ‘turf-wars’ in relation to GEMSD initiatives. As a result a positive increase in authority will yield a similar increase in redefinition domain. A like increase will occur with multi jurisdiction domain, as increases in redefinition of products and services offered by GEMSD there will be a corresponding increase in across government or multi jurisdictional activity not often experienced in traditional service delivery methods.

The increased redefinition of products and services within government facilitates the ability to increase participation in public and private sector partnerships and can be categorised as a direct relationship within the model. Also as new products and services are defined through redefinition domain there is a direct relationship with benchmarking of these new products and services to establish standards and offer better reporting and transparency of service.

An increase in redefinition domain requires across government changes in data storage and retrieval process with a net result of better data. As a result there is an identifiable increase in the integrity of data used throughout the GEMSD project. An obvious relationship within the redefinition domain is with managing the new order domain. Any increase in redefinition of government services will generate an increase in the need to manage change across government, in this case, managing the new order within the model.

The areas of demarcation and ‘turf-war’ syndrome within government have already been highlighted in relation to the redefinition domain as such any increase in the redefinition domain will result in an overall decrease in process participation and is categorised as a negative relationship within the model.

Only one relationship is identified with skills evolution domain and it is a positive relation with the interoperability domain. As increases occur within interoperability across government there is an increase in the evolution of GEMSD skill sets throughout the workforce to support the changes in government.

3.4.3 Acceptance AOS and domain relationships

The Acceptance AOS has eleven domain relationships with the remaining five AOS.

Of these eleven relationships, ten are positive and one is negative as seen in Figure 16.

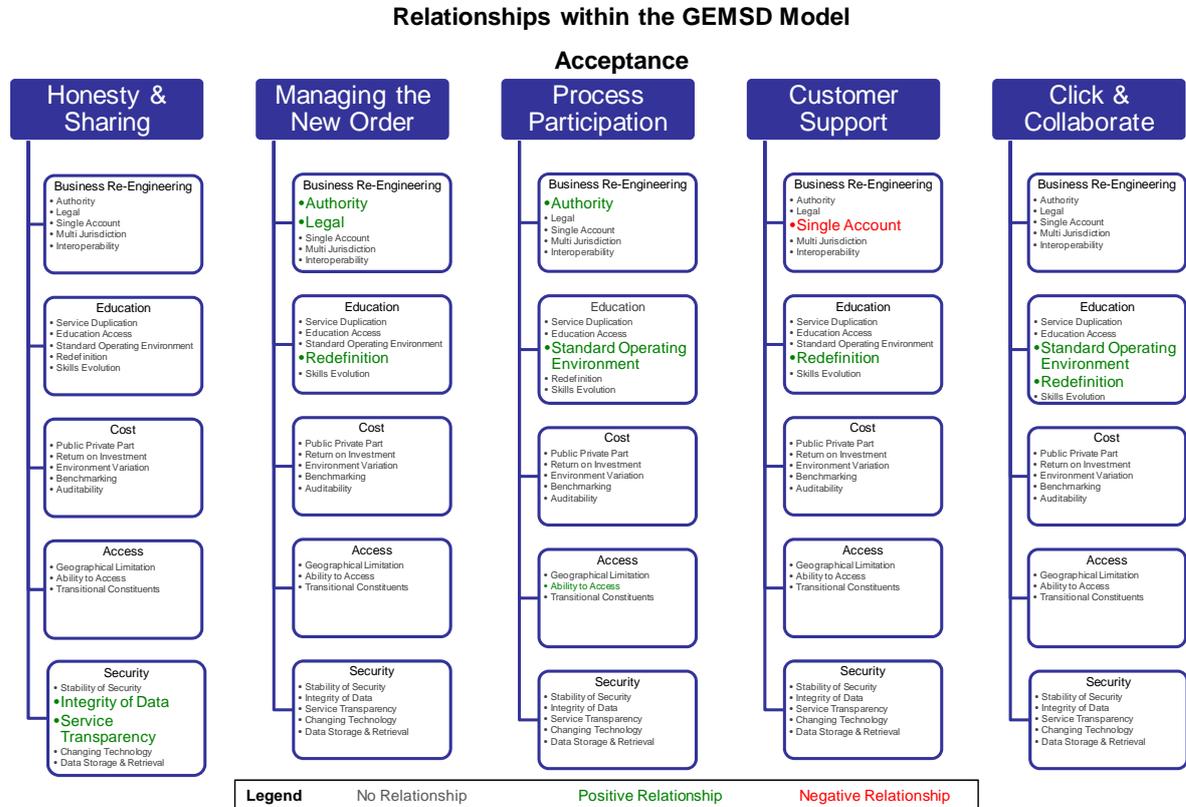


Figure 16 GEMSD model Acceptance AOS relationships

The Honesty and Sharing domain has two relationships with the security AOS. There is a positive relationship with the Service Transparency domain implying that if there is more stakeholder involvement and online review in the honesty and sharing domain there is an increase in service transparency domain from the Security AOS. Similarly there is a positive relationship with the Integrity of Data domain wherein an increase in honesty and sharing or public review there is more likely to be an increase in the overall acceptance and therefore the integrity of data being used.

In Managing the New Order domain there are three relationships with the Business Re-engineering and Education AOS. The importance of successful agency management across government and the Legal domain from business re-engineering have a positive relationship therefore, if there is an increase in a cohesive legal and

regulatory system across government departments and agencies there will be an increase in the management of relations across agencies and government departments. Similarly there exists a positive relationship with the Authority domain. As centralised authority with strong political support increases there is a corresponding increase in agency relationship management and less chance of agency demarcation inhibiting the success of managing the new order. The Redefinition domain has a positive relationship with managing the new order domain because as the redefinition of government products and services increases through GEMSD there is a parallel increase in the ability to manage the new products and services throughout a restructured government and the less opportunity for individual departments and authorities to impede or inhibit the success of data usage and integrity.

Process Participation domain has two positive relationships. Like managing the new order there is a relationship with the Authority domain. An increase in centralising authority and having strong political support will create a corresponding increase in the process participation of government departments, agencies and authorities. This will negate the inhibiting factors of mistrust and ‘turf-war’ mentality promoting greater chances of successful GEMSD projects. There is a positive relationship with SOE also. The more standard an operating environment, in electronic and mobile service delivery, the more process participation will be gained from government bodies and less chance of individual agencies employing differing platforms, technologies thereby inhibiting overall success of initiatives.

With the increase in redefinition (Redefinition domain) of services and products across government there is a positive relationship with the quality of customer relationship management and less likelihood of ‘that’s another department’ inhibitors to occur. However the lack of this relationship may affect a relationship with Single Access domain. There is a possibility of a negative relationship between the customer support domain and the Single Access domain. An increase in single access usage of government services through a front-end portal can create a situation where a decline in the redefinition of products and services is generated. Instead of redefining services, constituents are directed to existing services without the need for across government streamlining and redefinition thereby avoiding a consistent and accurate customer support avenue. However if redefinition and Single Access domains are

established there is a positive relationship between single access domain and Customer Support domain.

Again Redefinition domain has a positive relationship with Click and Collaborate domain, where the increased streamlining and less fragmentation of perceived services or products can increase the incentive to click and collaborate and reduce the likelihood of being delayed by responses from individual agencies or departments. Also the familiarity or increase of a SOE has a positive relationship on the likelihood of a click and collaborate approach to GEMSD.

3.4.4 Security AOS domain relationships

Thirteen relationships exist between the Security AOS and all five other areas; Business Re-engineering, Education, Cost Access, and Acceptance. Within these domain relationships twelve are positive and one negative in nature as depicted in Figure 17 below.

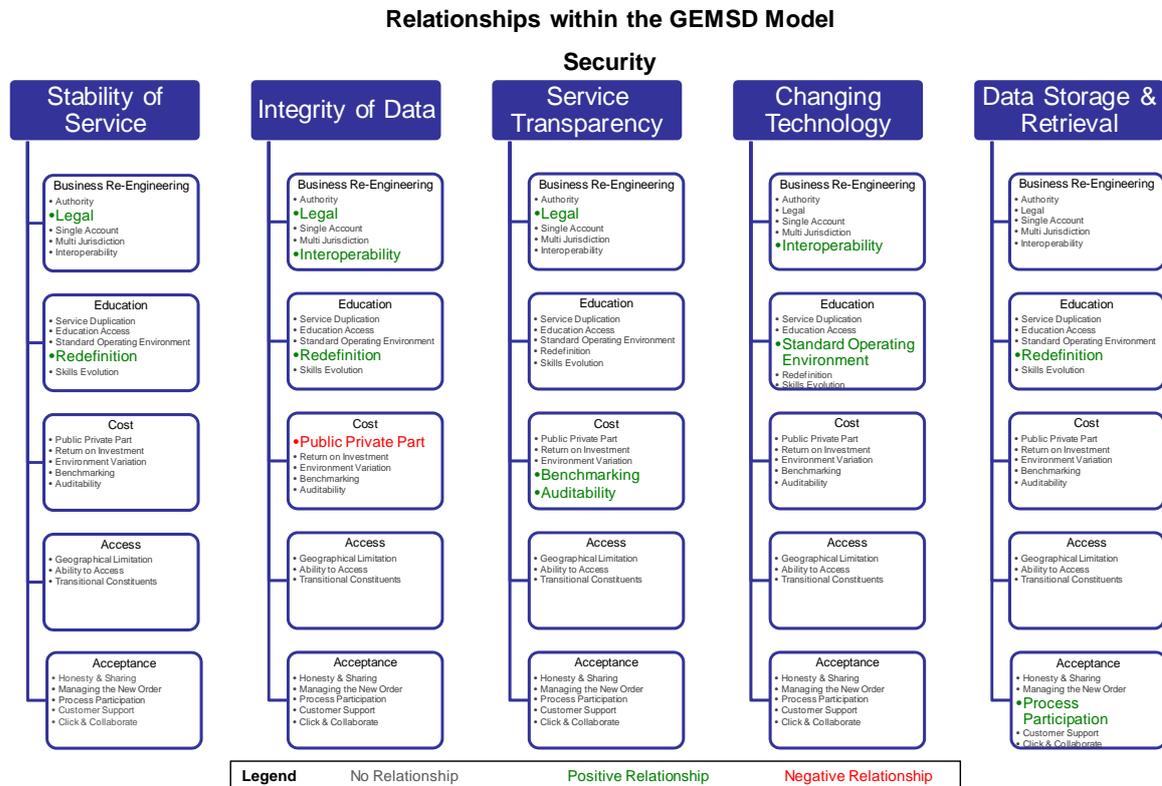


Figure 17 GEMSD model Security AOS relationships

The Stability of Service domain has three relationships with other domains from cost, business re-engineering and education AOS. The redefinition of products and services (Redefinition domain) has a positive relationship, as the level of products and services are redefined and systems such as indexes, data warehouses improve, so too must the stability of service and less opportunity for inhibitors such as malicious damage, hacking or delays in service.

Also the stability of service will promote a positive relationship with Cost Recovery domain as long-term gains will be made through the lack of downtime inhibitors to decrease service potential. A cohesive legal and regulatory environment (Legal domain) has a positive relationship on stability of service as the removal of agency specific legislation inhibitors will promote better standardisation, economy-of-scale and eventually stability of service to constituents and government users.

Integrity of data domain has relationships with four other domains. Three of these are positive and the remaining one negative.

Two of the positive relationships are with the business re-engineering AOS. The first is with the legal domain where the use of greater legislation is provided to improve identity management across government services there is a greater integrity of the data stored and used in GEMSD. The second positive is with the interoperability domain where literature supports the theory that greater interoperability between government agencies and departments will ultimately result in greater integrity of data across services. The third is with redefinition domain. The more redefinition of services across government to provide cross departmental services the more integrity of data is required for successful delivery of services.

The negative relationship exists with the public and private partnership domain wherein more devolution of services to private partners can create a decrease in data integrity across government especially in areas of essential services such as police, fire, and energy services.

Service transparency domain holds three positive relationships with legal, benchmarking and auditability domains. With greater regulation, checks and balances

and improved legal scrutiny there will be greater transparency of service with less likelihood of fraud and more constituent awareness. Consistent benchmarking of services will provide consistent service transparency through better service delivery and more regular testing of delivery mechanisms. Similarly the regular audit of services will promote more transparency on a formal basis throughout all GEMSD initiatives.

Two relationships exist within the Changing Technology domain. They are both positive and are based on legacy, as well as future, system technology. The underlying premise is how is it possible to deal with 'future-proofing' systems and how do legacy systems move with changing technologies? The increased use of SOE within GEMSD provides a format for standardisation, it minimises mismatches in technologies and provides a controlled environment for change to new technologies. Similarly greater interoperability between agencies and departments at all levels including procedures, formats, styles and methods will generate greater ability to adapt existing systems and with the changes in technology.

Traditionally in government data has been stored by individual departments or agencies in functional systems or silos of information. With the advent of GEMSD it is necessary to use this data across government through central data warehousing and similar techniques. Within this data and storage domain there are two positive relationships with other domains namely the participation domain and the redefinition domain. Better or increased participation in the process of centralising data will result in greater use of data across government services with a secondary relationship of better data integrity. To achieve better use of data across government the increased redefinition of services will promote and enable greater use of central data at many levels of government services.

3.4.5 Cost AOS and domain relationships

In all there are seventeen relationships with three other AOS, namely Business Re-engineering, Education and Security. Amongst the seventeen relationships all but four are positive as shown in Figure 18 below.

Relationships within the GEMSD Model

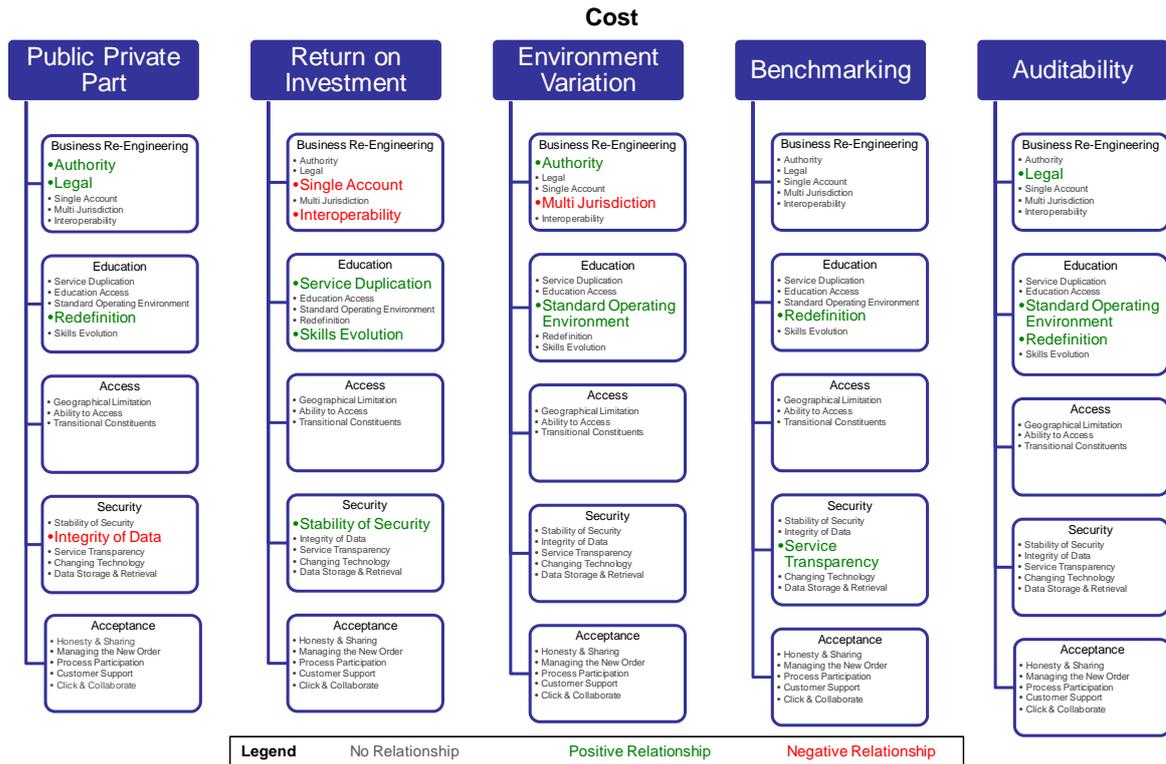


Figure 18 GEMSD model Cost AOS relationships

Public and private partnership (PPP) domain has four relationships with other AOS domains, of these three are positive and one negative. The three positive are with domains authority, legal and redefinition whilst the negative is with integrity of data domain. An increase in authority over the transfer of services to the private sector will create a corresponding increase in the incidence of public and private partnerships.

A comprehensive legal and regulatory infrastructure is necessary to support an increase in PPP activity. Without an increase in the legal domain there will be minimal increases in PPP.

Similarly greater redefinition of government products and services will result in greater ability to enter into public and private partnerships and move non-core government activities into the public arena thereby removing government from ICT and similar activities. The sole negative relationship is when there is an increase in

public and private partnerships there is a resulting decrease in government, data integrity with data being updated externally to government.

The return on investment domain has five relationships; three are positive and two are negative. The positive relationships exist with service duplication, skills evolution and stability of service domains. The negative relationships are with single access and interoperability domains. The greater use of GEMSD will lower the cost of service duplication and result in greater return of investment. Likewise the greater evolution of internal and external GEMSD skills will decrease costs and provide greater return on investment. With more stable services more revenue is generated again providing a greater return on investment. However the increase in fashioning and maintaining a single access portal will decrease the return on investment for this form of access. The initial capital expenditure to establish and maintain interoperability across government will seldom find a satisfying return on investment in the short to medium time frame and offers a negative relationship with return on investment.

Environment variation has two positive relationships with authority and standard operating environment, but one negative relationship with multi-jurisdictional domain. A greater use of authority in GEMSD initiatives will result in better environmental variations or minimal impact. Similarly the greater use of standard operating environments will provide a more stable operating environment for successful GEMSD. However an increase in external multi-jurisdictional influences such as those seen with federal or international agreements prescribing or dictating standards to provincial and local GEMSD will result in a decrease in environmental stability.

Benchmarking domain is in two positive relationships with redefinition and service transparency domains. An increase in the level of service redefinition will result in an increase in the need for benchmarking. As new products and services are defined and delivered there is an increase the level of benchmarking to establish patterns and standards. Similarly benchmarking has a positive influence on service transparency with greater ability to provide information on service levels and information richness and/or reach.

The auditability domain has three positive relationships within the model. These are with domains legal, standard operating environment and redefinition. A positive relationship exists between the legal domain and the auditability domain. To facilitate independent audit and regulatory support to GEMSD it is necessary to legislate provision for audit regulation and independent appraisal of service and delivery. An increase in standard operating procedures, methods and systems will see an increase in the use of single audit trails of a consistent nature. Similarly an increase in the redefinition of products and services across government will lead to an increase in single audit trail ability for all services and products giving rise to a secondary relationship of increased transparency although this is not a relationship in its own right.

3.4.6 Access AOS and domain relationships

The Access AOS holds four domain relationships with only two other AOS, Business Re-engineering and Education. Of those, three are positive and one is negative as represented in Figure 19 below.

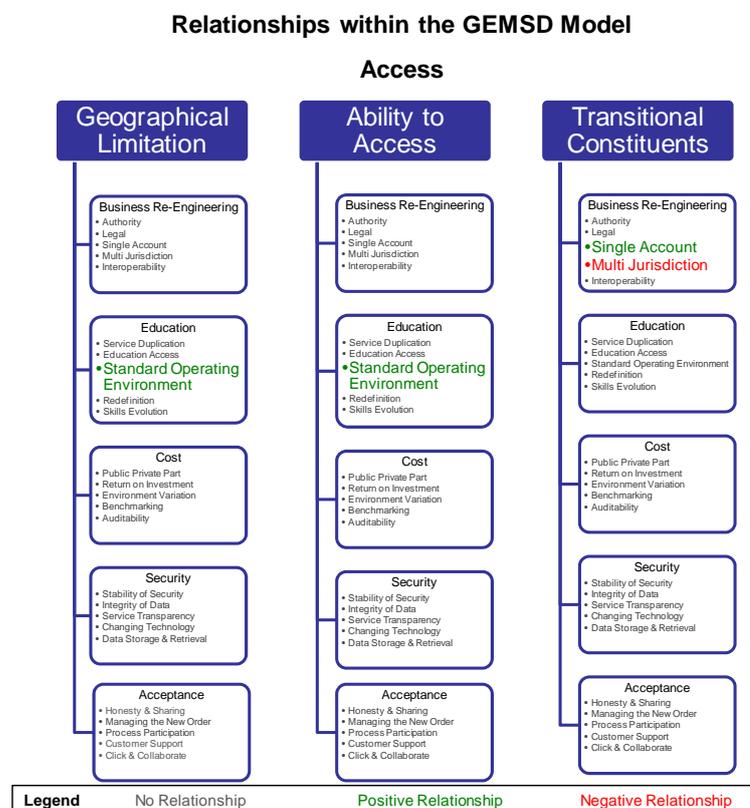


Figure 19 GEMSD model Access AOS relationships

The geographical limitation domain holds a positive relationship with the Standard Operating Environment (SOE) domain wherein, if better or more consistent SOE occurs across governments and agencies including mobile, wireless and electronic service delivery platforms, there is an increase in access by geographically remote or challenged areas.

In the Ability to Access domain there is a positive relationship with SOE as well, indicating an SOE consistently offered across government provides a positive or increased ability to access for those constituents who experience disabilities with traditional forms of access. The catalyst in this domain is community stakeholder participation. It is worth noting that there is almost a secondary relationship inferred which is the redefining (redefining domain) of government services to achieve the desired SOE. Also, the process participation domain is a secondary relationship inferred to achieve community stakeholder involvement; however these are secondary to SOE and are not relationships in their own right.

The Transient Constituent domain has two relationships of which one is negative. The positive relationship exists with the Single Access domain wherein an increased single access point, or better single access portal to government's services regardless of electronic or mobile platform will have an increasing effect on the usage by transient and ex-patriot users of the services.

The negative relationship exists with the jurisdictional domain indicating while there may be an increase with transient patronage but there can be a decline in jurisdictional influence and ability to service.

3.5 Conclusions

This chapter has presented the interim theoretical model of success factors for GEMSD illustrating the inhibitors and success factors in electronic and mobile government service initiatives. It identifies six AOS and the individual domains of each. Each of these domains has then been related to other domains to show positive or negative relationships within the model. Also the chapter has defined success and

failure of GEMSD and described the government jurisdictions to be used in the testing of the model.

The following chapter describes the investigation method and philosophical perspective employed throughout the study. Further it explains the method utilised in the investigation of a success factors model for GEMSD. It discusses the underlying philosophical foundation (epistemology), assumptions (ontology) and validity of the research. Further it outlines the hypothesis of the model and the way it will be validated.

CHAPTER 4

INVESTIGATION METHOD AND PHILOSOPHICAL PERSPECTIVE

4.1 Introduction

The role of research is to provide a method for obtaining answers to relevant questions by an inquiring studying of the evidence within the parameters of a scientific method. The purpose of this chapter is to explain the method utilised in the investigation of a success factors model for GEMSD. Further it discusses the underlying philosophical foundation (epistemology), assumptions (ontology) and validity of the research.

The thesis contributes to the body of knowledge in electronic and mobile government service delivery by the identification, and categorisation of individual factors which promote or inhibit the success of GEMSD projects and initiatives. Further it establishes AOS and domains which form the basis of a theoretical model delivered from a comprehensive review of contemporary literature. It then applies the interim model to an extended case study of the Victorian experience based on the approach of Yin (1994). Further it reviews the outcome of the extended case study with a comparative analysis with other GEMSD experiences from Finland, Singapore, and the World Bank. This chapter utilises Crotty's (1998) four elements of the research process, starting with the adopted paradigm or epistemology (constructionist), through the methodology (qualitative), the method adopted (extended case study) and the technique used (long interview). The chapter concludes with limitations and evaluation criteria.

4.2 Research objectives

The key objective of this study is to identify success factors for GEMSD service delivery and model these. Such a model would prove useful for any government involved in either: the planning, development and implementation of GEMSD, or reviewing the efficacy of a system that has already been implemented. The three objectives of the study are to develop, identify and validate a model for the successful delivery of GEMSD. They are to:

1. Develop a success factors model through identification of those factors and classify into AOS and further classify into domains from a comprehensive literature review
2. Examine the relative importance of these AOS, domain factors and relationships in promoting successful delivery of government services using GEMSD.
3. Validate the usefulness of the model for those planning and implementing GEMSD through applying the interim model to the Victorian experience and further comparison with overseas experiences in Finland, Singapore and the World Bank.

4.2.1 Research aims

This research aims to investigate and model factors that determine the success of GEMSD projects. In order to develop the model the investigation:

1. Identify the factors that promote or inhibit the success of GEMSD projects and initiatives;
2. Classify the identified factors into domains of influence;
3. Group the domains of influence into Areas of Significance (AOS);
4. Deliver a reference for positive intervention in GEMSD project;
5. Deliver a case study of the Victorian experience of GEMSD using the methodology; and
6. Document the results from the review of two comparable worldwide and current projects.

As verification and validation the investigation aims to apply the success factors model to the Victorian scenario and thereby:

1. test the usefulness of the model,
2. refine the model in light of the comprehensive case study of the Victorian experience and comparison with experiences in Finland, Singapore and the World bank.

4.2.2 Research questions

The model described in chapter 3 suggests the complexity of GEMSD modelling requires multiple levels of AOS and domains. Contained within these levels of the GEMSD model are twenty-eight hypotheses. In order to aggregate the twenty-eight questions of the GEMSD model, the AOS and domain relationships, and questions have been formatted into tables for each of the six AOS. In each table there is an overlay premise with success and inhibitor factors for each domain listed under these premises. These are then elaborated after each table and form the basis of the interview questions.

Business re-engineering AOS questions

Inhibiter ←	Success →
The project is less likely to be successful/ or the project will require extra focus to address known risks if it entails.....	The project is more likely to be successful if it entails...
Fragmented control and channel rivalry	Authority centralised with strong political support
Agency specific legislation	Cohesive legal and regulatory environment
Individual agency orientated services	Single access portal for 'one-stop-shop'
Constituency/agency specific service	Multi jurisdictional policy transfer capability
New and old systems mutually exclusive	Legacy and ICT systems ported

Again this AOS has five domains and five hypotheses.

1. Does GEMSD need to have centralised authority and political support to be successful or can it be achieved successfully through decentralised control and limited political support?
2. Is it important to have a cohesive legal and regulatory environment or is agency specific legislation adequate?
3. Does single electronic portal access promote success and do individual departmental access portals inhibit success?
4. Does multi-jurisdictional service promote success and does agency specific service inhibit GEMSD?
5. Does the introduction of ICT enhance (promote) or complicate (inhibit) existing services?

Education AOS hypotheses

Inhibiter

Success

The project is less likely to be successful/ or the project will require extra focus to address known risks if it entails.....	The project is more likely to be successful if it entails...
Fully duplicated service delivery systems	ICT Literacy and learning
Multiple office access	7/24 access for all constituent demographics
Competing technology syndrome	Standard operating environment
Agency warehousing of data and services	Re-definition of products and services
Government employees unfamiliar	Developed skill sets

The education AOS has five domains being: service duplication; education access; standard operating environment; redefinition of services and skills evolution. The associated hypotheses are:

1. Does ICT literacy promote the use of GEMSD and do fully duplicated service delivery mechanisms inhibit GEMSD success?
2. Does 7/24 access promote more successful GEMSD and does the maintenance of multiple office access points inhibit success?
3. Does a standard operating environment promote customer acceptance and do competing technologies inhibit success of GEMSD initiatives?
4. Does the re-definition of government’s products and services promote or inhibit successful GEMSD or does the existing agency based system suffice?
5. Has the introduction of new skill sets with GEMSD promoted successful service delivery or inhibited transition to GEMSD?

Acceptance AOS hypotheses

Inhibiter

Success

The project is less likely to be successful/ or the project will require extra focus to address known risks if it entails.....	The project is more likely to be successful if it entails...
Prejudice misinformation	Stakeholder transparency and online review
Parallel systems and agency demarcation	Agency relation management
Conspiracy theory	Process participation
That's another department	Customer relation management
Take a number	Click and Collaborate

The acceptance AOS has five domains also. These are: honesty and sharing; managing the new order; process participation; customer support and, click and collaborate. The hypotheses associated with the acceptance AOS are:

1. Does online review and stakeholder transparency promote successful GEMSD acceptance or does it create prejudices which inhibit success?
2. Do agency demarcations inhibit success of GEMSD and does agency relationship management promote success?
3. Does agency process participation promote GEMSD success or does it heighten inhibiting conspiracy prejudices?
4. Does single access customer relationship management foster success or inhibit good service delivery?
5. Does electronic access (click and collaborate) promote acceptance of GEMSD or is it the same as traditional service delivery methods (take a number)?

All six AOS, domains and hypotheses form the basis for the interview instrument and questions however the order, wording and number of questions will vary to the hypotheses listed above and will be ordered, worded and numbered to stimulate maximum information rich responses from interviewees.

Security AOS hypotheses



The project is less likely to be successful/ or the project will require extra focus to address known risks if it entails.....	The project is more likely to be successful if it entails...
Susceptibility to malicious damage	Communication stability
Susceptibility to fraud	Data integrity
Restraints on agency liberties	Transaction audit & transparency
Mismatch with legacy security systems	Future proof technology enhancement
Multiple system owners(silos) and exposures	Central warehousing

The five domains within the security ASO are: stability of service; integrity of data; service transparency; changing technology and data storage and retrieval. The five hypotheses are:

1. Does communications stability decrease the susceptibility to malicious damage and eventually promote successful GEMSD security?
2. Does the across government data integrity inhibit or promote the occurrence of fraud and the overall success of GEMSD security?
3. Does routine transaction audit and transparency promote or restrict the success of security in GEMSD?
4. Do legacy systems inhibit GEMSD security and can future technologies be facilitated successfully?
5. Will the central warehousing of data promote or inhibit the success of GEMSD security?

Cost AOS questions

Inhibiter

Success

The project is less likely to be successful/ or the project will require extra focus to address known risks if it entails.....	The project is more likely to be successful if it entails...
Total Public funding	Effective public- private/other government partnerships
High initial investment cost not recoverable	Cost Recovery – Service fees or savings achieved
Susceptible to Political influences	Semi autonomous audit and regulation
Multiple audits	Transparent single audit trail
Limited benchmarking	Continuous benchmarking/audit of service

In this AOS there are five domains and five hypotheses.

1. Does full government funding inhibit the success of GEMSD and will effective public private partnerships positively affect the success of GEMSD initiatives?
2. Is the recovery of GEMSD costs an inhibitor to GEMSD success or does cost recovery promote success of projects?
3. Do audit and regulatory checks inhibit or promote GEMSD success and are they susceptible to political intervention?
4. Does single audit trail promote or inhibit success of GEMSD or will multiple audits suffice?
5. Does continuous benchmarking promote GEMSD success and does the lack of benchmarking inhibit success?

Access AOS hypotheses

Inhibiter

Success

The project is less likely to be successful/ or the project will require extra focus to address known risks if it does not address.....	The project is more likely to be successful if it entails...
Servicing geographically remote areas	Key infrastructure and kiosk hosting
Users with disabilities	Community stakeholder participation
Transient users	Consistent single portal to services

There are three domains and five hypotheses in the access AOS. The domains are geographical limitation, ability to access and transient constituents. The hypotheses are:

1. Does the use of kiosk or ATM style service delivery mechanisms adequately service geographically remote areas or does it inhibit GEMSD success in this area?
2. Does community group and stakeholder involvement promote or inhibit GEMSD success particularly for those users with access disability?
3. Does consistent single access portal promote successful use by transient users?

4.3 Research assumptions

Research assumptions or research ontology characterises the underpinning on which the research is based. In relation to this GEMSD study there are a number of assumptions in effect. As an electronic, mobile or computing based service, Hirschhiem’s (1992) historical perspective on systems analysis and design suggests there are five ontological considerations associated with the GEMSD discipline:

- Information or data;
- Information systems;
- Human element;
- Information technology; and
- Organisation.

In contrast to the Bunge, (1977) Wand and Weber (1990) approach which excludes institutional or human realities, this research is more aligned with Hirshhiem’s (1992) stance accepting his five areas of consideration.

The prime assumption is that there is no singular reality in this study and that multiple realities are constructed by individuals. This holistic approach relies on constructing a reality from the views and experiences of those actively involved in GEMSD projects and implementations. This reality is only pertinent to the context of GEMSD and the people who are involved in the process of managing, implementing, reviewing and planning the various factors or components. Also, it is assumed that the individual realities are an accurate test for the theoretical model derived from the literature reviewed.

Due to the emergent nature of the qualitative study, the human-as-instrument was used as the best suited means for data acquisition, because, as Guba and Lincoln (1994) affirm, ‘only the human instrument has the characteristics necessary to cope with an indeterminate situation.’ However it is acknowledged that regardless of diligence applied throughout the research, reality is not totally free of the analyst and some construction may occur.

4.4 Philosophical foundations (epistemology)

The philosophical foundations or research epistemology relates to the stance adopted by the researcher. In selecting the appropriate philosophical stance or influence, Doolin (1995) argues the breadth of information systems as a discipline requires a mixture of both positivist and interpretivist; later Ferguson and Shaw (1996) elaborated that the relevant research foundation should be determined by the problem at hand and the intended audience.

It provides a means to understanding the data collected. In an Information Systems qualitative study, such as this, there are three major underlying epistemologies. Myers’ diagram Figure 20 represents these influences.

Sekaran (1992) contends that research can be divided into two broad categories: applied research to resolve a particular problem or situation; and basic, or fundamental, research to further explore and contribute to the general body of knowledge currently available. Both categories employ a systematic and organised way of investigating a subject. This structured investigation is called a research methodology.

For the purposes of this investigation, the research is of an applied nature and is aimed at resolving a particular knowledge gap in the area of government electronic service delivery and the formulation of a success factors model.

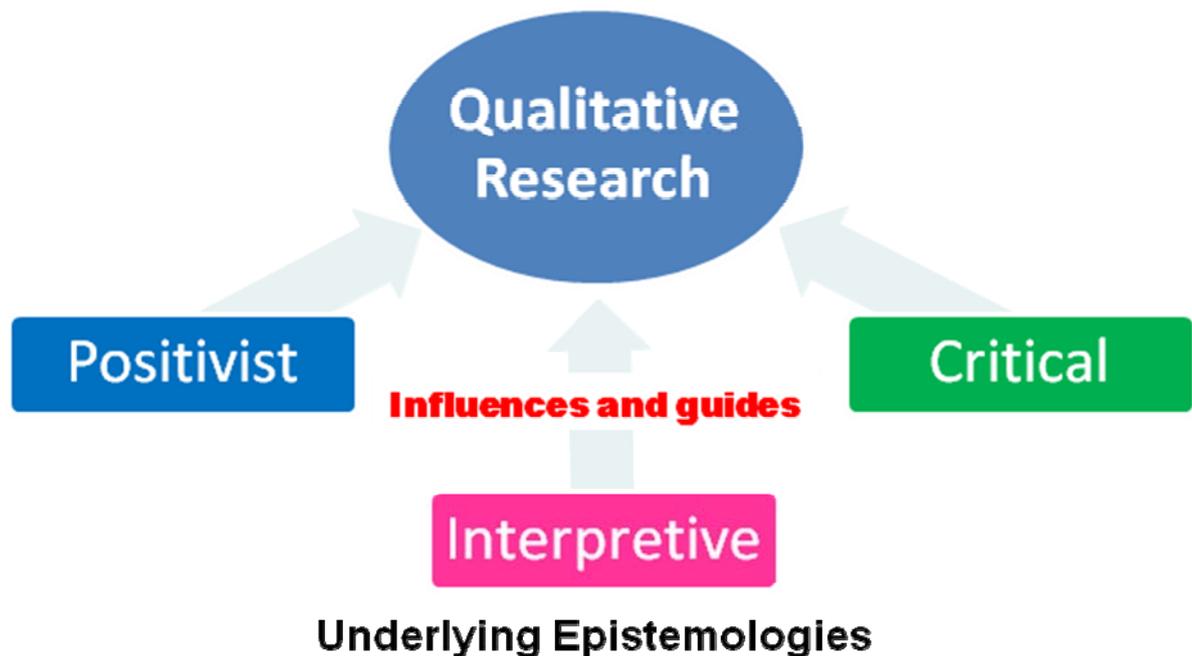


Figure 20 Qualitative research influences (source: Michael D.Myers 1997)

Figure 20 depicts Myers' (1997) research influences and is summarised as follows:

- Positivist influence

According to Myers (1997), positivism normally applies with given parameters and an assumed objective reality thereby enabling the researcher to describe a phenomenon with measurable operandi such as statistics, facts and figures. The reality is independent of the researcher and their investigation instruments. Positivists test theory, in an attempt to increase the predictive capabilities of phenomena. Orlikowski and Baroudi (1991) and more recently Yin (2002) describe Information Systems Research (ISR) as positivist research providing there is proof of formal propositions, quantifiable measures of variables, testing of questions, and a synthesis of inferences about the phenomenon from a sample taken from an identified population. As this study relates to multiple realities the positivist approach was deemed inappropriate.

- Interpretivist influence

In direct contrast to positivist research, interpretivist research is subjective in nature. The interpretivist researcher assumes reality is created from the use of social constructs such as shared meanings, language and the researcher's interpretation of participant's opinions of a phenomenon in context. Thus interpretivist method of ISR is 'aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context' as stated by Walsham (1993). Lowry (1997) contends that IS and ISR are contentious as it 'always involves people, technology, the linkages and the interaction between them'. He continues by suggesting if the technology component is removed we are in fact studying referenced disciplines such as psychology, organisational behaviour or sociology.

Interpretive research inherits its philosophical lineage from hermeneutics and phenomenology Boland (1985), (1991), Denzin and Lincoln (2000). Interpretive research attempts to understand phenomena through meanings that people assign to them in the context of Information Systems (IS). It does not predefine dependent and independent variables, however it does allow for the complexity of human interpretation of situations and emerging phenomena according to Klein and Myers (1999). Thus the interpretivist approach to research is appropriate for this research.

- Critical influence

A critical researcher varies from positivist and interpretivist by assuming that social reality is constructed from a historical foundation. Assuming that reality is a reproduction from other events or is produced by people. The critical researcher concludes that although a phenomenon occurs its result is dominated by social, cultural or political influences. Therefore critical research adopts an identification role of highlighting conflicts, contradictions and oppositions in the phenomenon, usually in social theory reality as suggested by Habermas (1984), as well as Hirschheim and Klein (1994).

As this research is not highlighting conflicts, contradictions and oppositions in the phenomenon, it was deemed inappropriate to answer the research question.

Having reviewed the three underlying epistemologies it is apparent the interpretivist approach is the most suitable in this study.

This is represented in Figure 21 graphically in the research hierarchy as proposed by Crotty.



Figure 21 Research hierarchy for this thesis (modified from Crotty 1998)

4.5 Research methodology and rationale

Myers (1997) Information Systems (IS), and Information Systems Research (ISR), are relatively new areas of research and research discipline according to Myers and Avison (2002). Further it is subject to much debate as to the methods to be employed. Some reference IS and ISR more to the social or behavioural sciences emerging from writings such as those of Kaplan (1964), Kerlinger (1979), Babbie (1989), or in business Gay and Diehl (1992). While others assert IS and ISR to be associated with the sciences, particularly in the qualitative positivist school as proposed by Popper (1989), Straub (2005) and Boudreau, Gefen et al. (2001).

The quantitative investigation is most commonly encountered as part of formal or conclusive research. Traditionally derived from scientific research it is aimed at providing information useful in determining conclusions or decisions. Straub, Gefen et al. (2005) contend quantitative research is characterised by the use of structured research instruments and minimal detail on behaviour, attitude and motivation, it relies on large samples as a representation of the study population. These are often

replicated or repeated to provide high reliability and given to objective analysis of the resulting information. Because this study is of a subjective nature quantitative methods are not ideal for this investigation.

In contrast a qualitative investigation has the unique power to answer interpretive meaning questions by giving the investigator a penetrating glimpse into the minds and lives of the respondents, Tan and Hunter (2002). It is usually characterised by less structured research instruments. Common techniques employed in qualitative research include in-depth interview, focus groups, case study and projective methods. These provide greater depth of findings and attitudes, and greater latitude for intensive probing resulting in a more subjective analysis. Qualitative researchers conduct their investigations 'in the field', spending time in organizations attempting to document or describe the situation or phenomenon, Yin (2002). This thesis adopted a qualitative investigation because the study required in-depth knowledge of the phenomenon and their natural surroundings.

In selecting a methodology, mindful of the benefits and limitations as described in table 1 on the next page, the research characteristics of quantitative and qualitative styles can be summarised in the table below this investigation into the success factors model for GEMSD is conducted in a qualitative style. This investigation into the success factors model for GEMSD is conducted in a qualitative style.

Quantitative	Qualitative
Data is usually gathered using structured research instruments	Data is usually gathered using less structured research instruments
Results provide less detail on behaviour, attitudes and motivation	Findings are more in-depth since they make greater use of open-ended questions
Results are based on larger sample sizes that are representative of the population	Results provide much more detail on behaviour, attitudes and motivation
Research can usually be replicated or repeated, given it high reliability	Research is more intensive and more flexible, allowing the researcher to probe since s/he has greater latitude to do so
Analysis of the results is more objective	Results are based on smaller sample sizes and are often not representative of the population
	Research can usually not be replicated or repeated, given its low reliability
	Analysis of the results is much more subjective

Table 1 Qualitative and quantitative research characteristics (modified from Myers) (Myers 1997)

In considering the most appropriate path for studying the GEMSD phenomena it is important to understand the underlying principles of scientific investigation design. Quantitative and qualitative research designs are two approaches in scientific research. Quantitative research is based on the positivist paradigm that assumes reality is stable (Morse and Field 1995) and that truth can transcend personal bias to provide an objective worldview and that research findings relate to researcher's interpretation of data. Traditionally quantitative research claims to be value free and is said to be objective, with the researcher a separate observing third party who is identifying and explaining, but not involved in the phenomenon itself. The empirico-analytical methods assume knowledge is only true and trustworthy if found 'objectively' Roberts and Taylor (1998). Quantitative research is research that focuses on measurement and systematic testing of deductive theory (Morse and Field 1995). Reliability and validity of the measuring instruments are essential, as is rigor and reproducibility.

Quantitative research uses numerical values, seeks causes and facts, looking for relationships between variables to explain causality so that accurate predictions can be made (Morse and Field 1995); (Denzin and Lincoln 2000). Quantitative research addresses what, when and how questions. It uses data that is collected by the senses and can be used

to measure at all four levels of theory: descriptive, co-relational, explanatory and predictive (Roberts and Taylor 2002). Whilst many of these characteristics appeal for the investigation of GEMSD phenomena, the quantitative research approach was not considered an appropriate approach to gain maximum insight from an emergent discipline such as GEMSD as it failed to adequately allow for individual's interpretation of the environment and phenomena.

Alternatively qualitative research aims to illuminate peoples' interpretation of facts focusing on motivation, reason and understanding (Porter 2008). Qualitative data allows the world to be seen through the eyes of the participants (Taylor and Robert 1998). It focuses on human consciousness, subjectivity, values and experiences and the changing nature of knowledge (Roberts and Taylor 2002) research is designed to answer why questions and is suitable for providing descriptive data and theory development research. (Wainwright 1997) states that

Generally, qualitative research can be characterised as the attempt to obtain an in-depth understanding of the meanings and 'definitions of the situation' presented by informants, rather than the production of a quantitative 'measurement' of their characteristics or behaviour. (Wainwright, 1997:2)

Qualitative research is usually conducted in natural setting so that context can be taken into account with no experimental controls placed on the phenomenon being studied (Morse and Field 1995). Qualitative researchers stress the qualities of entities, on processes and meanings, the socially constructed nature of reality, the relationship between the researcher and what is being studied and the situational constraints that influence the enquiry. Denzin and Lincoln (2000) state that qualitative research has a long history, it is multi-paradigmatic and is many things.

By outlining the qualities of the two different approaches a dichotomy between the two approaches is implied. However, Porter (2008) argues that neither fit the described criteria perfectly and thus a false dichotomy can be perceived. Whilst many researchers advocate the complementary value of quantitative and qualitative research the debate around them continues with critiques of each approach. Qualitative researchers' acknowledgement of the

value-laden nature of research is seen as an attack on the assumed objective nature of quantitative research. On the other hand qualitative researchers see positivist quantitative researchers as attempting to legislate one version of truth over another (Denzin and Lincoln 2000). According to Yacopetti (2000) a major criticism of quantitative research is that it is reductionist in nature and that it fails to produce socially relevant data and ignores power relations. Qualitative research, on the other hand, is criticised for not producing data that is credibly transferable or able to be generalised.

Wainwright (1997) believes that qualitative research has developed a tendency to adopt an uncritical attitude to the beliefs and behaviour of informants without considering their emancipatory power. This lack of willingness to place judgment leaves the researcher in a position of impartial reporter, he states

the reluctance to address the processes by which different forms of consciousness are socially and historically constructed, coupled with the absence of any evaluation of the epistemological status and emancipatory potential of a set of beliefs, amounts to little more than a passive legitimization of dominant ideology. (Wainwright, 1997; 2)

The development of applied scientific knowledge has the intention of supporting practice. In this discipline applied research is important and this thesis is a useful GEMSD study based on the realities of good practice. Unfortunately at times, developed theory is not practical in nature and a theory practice gap referred to as praxis is noted. The importance of theory and practice being in dialectical relationship is recognised as an important consideration in research, to ensure the relevance of data to practice. Similarly the value of scientific knowledge for GEMSD was recognised with the realisation that some practices in the discipline are based on traditional methods and are not always the most effective practice.

From this awareness the demand for 'evidence based' practice was established. This is a relatively new development in GEMSD practices. The need for scientific research that relates to practice and supports practice is considered a basic requirement for the area today. Evidence-based best practice is defined as the process of systematically finding,

appraising and using contemporary research as the bases for clinical decisions. It reduces the value of clinical experience whilst increasing reliance on literature (Kyriacou 2007) and as previously noted may adversely affect the process by devaluing non-evidentiary aspects (Grant, Feilding et al. 2008) without any evidence that it improves outcomes.

In any qualitative inquiry there are a number of common elements:

1. The ability to describe the GEMSD phenomena, or phenomenon, in an attempt to explain and understand them;
2. It is important that the GEMSD inquiry is context dependant and not an experiment or contrived study like a quantitative inquiry;
3. It is the ability to understand how individuals perceive the world around them thereby providing multiple realities to GEMSD inquiry;
4. Although the evaluator is an integral part of the inquiry, it is important not to disturb or hinder the process taking place;
5. Meticulous recording of GEMSD data; and
6. Continually reducing GEMSD data by identifying themes and coding.

4.6 Research method

In order to achieve the aims of this investigation, a three step process was employed. The first was a synthesis of information and data collected from the review and analysis of current literature; this was used to determine the major issues in GEMSD and draws on experiences worldwide. It subsequently formed the initial interim model as described in chapter three. Next, a comprehensive study of the Victorian implementation was used to provide insights into the relevance of this mode, thereby testing the relevance of the model locally in Victoria. Finally, a comparison with overseas GEMSD projects in Finland, Singapore and the World Bank is conducted. This comparison is used to provide a check and balance on global relevance, validity and rigor of the study and is supplementary to the major Victorian case study. A diagram of the research method can be seen in Figure 22.

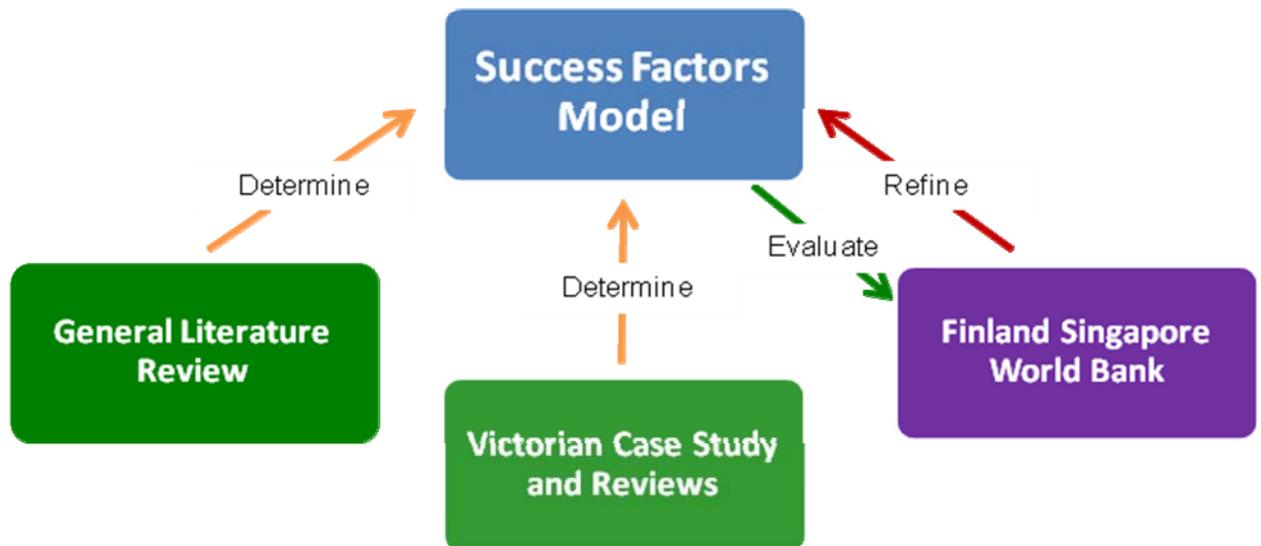


Figure 22 Method of analytical induction for this thesis

4.6.1 Literature review

A literature review was used to provide the theoretical basis of the GEMSD model. It utilises appropriate and contemporary information from Victoria, and overseas for local and global relevance.

The approach adopted is consistent with accepted research practices. Kumar, van Dissel et al. (1998) support this view and continues to highlight three reasons for the literature review.

1. To provide a focus and enhance the research problem
2. To assist and improve the methodology
3. To broaden the knowledge base of the research topic.

Further, Sekaran (1992) reasons that the purpose of a literature review or survey is to maximise the experience and evidence of the problem, or question at hand, and to ensure that no important variable has been overlooked. The background literature review was extended to incorporate the development of a GEMSD model.

Material was gathered from a spectrum of respected published books, journals in public management, telecommunications, computing and information systems technology areas. Recent authoritative texts on offshore GEMSD studies and implementations were used as suitable reference. After gaining executive permission from the Victorian government, extensive use was made of the Victorian

government's eGovernment resource centre, both online and at Multimedia Victoria. Internet search engines including Alta-Vista, Google and Infoseek were utilised to locate relevant and authoritative articles published on the World Wide Web. Use was made of information available from the business and law faculty resource centres via means of CD-ROM based and electronic databases such as PROQUEST, EBSCO, ABI/INFORM and INSPEC.

4.6.2 Comprehensive case study - local

The primary research method adopted in this study is the comprehensive case study of the Victorian government experience of GEMSD and supplementary comparison with comparable overseas sites.

Benbasat, Goldstein et al. (1987) suggest case studies are very well suited to ISR as 'interest has shifted to organizational rather than technical issues.' The case study method was employed to validate and refine the model derived from the literature review and thus satisfying research aims. The case study provides an in-depth interpretive view of the phenomenon associated with GEMSD. As Yin (1994) suggests, 'A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.'. Both Orlikowski and Baroudi (1991) support Yin's stance and continue by suggesting that case study research is the most common qualitative method used in information systems. This is a position that Alavi and Carlson (1992) agree with and support.

An alternative method for the study was a survey. This method was discounted as part of a feasible method as its ability to investigate the subject phenomenon in context is limited by suitable population (Yin 2002). It is possible to design a survey which can limit the number of variables or questions asked to a target level, thereby providing maximum respondents. However, this causes deterioration in quality, particularly in contextual exploration such as government ESD (Yin 1994).

Consequently an extended field case study was employed to study in detail the Victorian Government's initiatives through GEMSD. A multilevel approach was used with standardised interviews at varying levels including management, implementers and policy makers. The interviews were conducted utilising the long interview technique first promulgated by McCracken (1999).

Hodgkinson (2003) notes Victoria commenced GEMSD in the early 1990's with strategic planning and preparation. In 1996 the then Kennett government announced the Government online and Vicone projects with the then treasurer Alan Stockdale as the political champion heading the implementation.

The change of government in 1998 slowed progress temporarily; however in 1999 the new Bracks government announced the connecting Victoria initiative, a variation on the previously cited Victoria online. Whilst Victoria's progress has centred on eGovernment services there has been some work done in mGovernment through agencies such as the Royal District Nursing service and South West Health Network.

4.6.3 Case study – overseas comparators

In order to achieve the research aim of documenting the results from the review of three comparable cities worldwide and current projects, it was necessary to normalise and compare cities or provinces with similar GEMSD implementations. This approach sought to establish a clear means of observation similar to that used by David deVaus (1992) in his social research. He recommends factors of commonality when comparing. Whilst not as comprehensive as the Victorian study the comparators offer alternative views or confirmation of the Victorian realities.

When selecting suitable comparators, comparison standards were developed to deliver reasonable arguments to supplement the extensive Victorian case study. In general there were three significant reasons for inclusion:

1. GEMSD progress;
2. Socio economic similarity; and
3. Similar commencement times for major GEMSD reform.

The GEMSD progress was conducted in June 2001 and reviewed in late 2004 and 2007 and these sites were found to be of comparable standard and are used to supplement the extensive Victorian case study.

Socio economic similarity was based on Sibley's (2001) World Bank Group data and statistics.

Factors of commonality were located based on existing theories and concepts identified in the literature review and case study highlights. The comparative sites

selected were Finland, Singapore and World Bank. These sites were identified from the literature reviewed as being global leaders in the area of GEMSD as identified by the United Nations (2001), West (2002), (2008), United Nations Dept of Economic and social affairs (2003). Email contact was established with each comparative site to obtain permission and eventually greater detail on those success factors identified in literature.

Australia, Finland and Singapore are all classified by the World Bank as high-income economies and as such were comparable socio-economic comparators for this study. This comparison standard was based on 2003 Gross National Income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: *low income*, \$765 or less; *lower middle income*, \$766 - \$3,035; *upper middle income*, \$3,036 - \$9,385; and *high income*, \$9,386 or more (all figures are quoted in United States Dollars \$USD).

All comparator countries had similar commencement dates for major GEMSD reform in the late 1990's generally 1997 to 1998 and have progressed in a similar manner until the time this study was completed.

- Finland

The Finnish government administration, primarily the Ministry of Finance, has a number of key policies and projects in place to facilitate GEMSD. The utilisation of existing citizen ID numbers and national databases, plus a strategy of taking information just once from citizens and re-using it, has made a great contribution to the GEMSD process and the structure of their services. A key example of the benefits is the Finnish census, which since 1985, had been compiled totally from electronic data taken from 30 government databases Office of the E Envoy (2001).

Finland were leaders in secure transactions. Secure electronic transaction requires customer recognition, and Finland pioneered this arena with the introduction of electronic identity (EID) cards and PKI in December 1999. The Finnish Population Register Centre is the certification for this identity roll and verification authority as detailed by the Ministry of Finance (2004).

One of the other major government GEMSD initiatives in Finland was the JUNA project <http://www.intermin.fi/suom/juna/english/index.html>. The objective of JUNA was to increase the number of electronic services available on the Internet and develop the expertise needed to produce these services so that citizens and business could use good quality public services in their daily lives. The particular aims were to:

1. assess the opportunities and restrictions relating to e-Government in order to create the basis for the development of electronic public services;
2. ensure that public authorities move to produce and use coherent electronic services;
3. increase the potential of citizens, enterprises and organisations to apply information and communication technology to public services;
4. improve the quality of public services, while at the same time preventing exclusion of citizens and supporting the harmonious development of regions; and
5. increase cost-effectiveness and service provision potential within the government administration.

The JUNA Project was citizens, enterprises and service provider orientated and covered by all sectors of public administration, at State and local level.

Also Finland has a very high level of ICT with high use of mobile services primarily due to contributions by government and the private sector for example Nokia.

- Singapore

Singapore's e-Government journey started as early as the mid 1980's with the Civil Service Computerisation Programme (CSCP). The CSCP was conceived with a clear direction of turning the Singapore Government into a world-class exploiter of IT. It marked the beginning of computerisation in Singapore and was primarily focused on improving internal operational efficiencies through the automation of traditional work functions and reducing paperwork as detailed by IDA (2004).

In the late 1990's Singapore recognised the convergence of IT and telecommunications technologies and in 2000 launched the first e-Government Action Plan which provided a strong foundation for the implementation of the second Plan. Initially from the ministry of finance but later from the Infocomm Development Authority (IDA), a total amount of S\$1.5 billion was committed to the plan. The plans were implemented by a number of government bodies and government corporations such as 'Crimson Logic' formerly known as Singapore Network Services. The e-Government strategic framework was centred on three critical relationship dynamics:

1. Government to Citizens (G2C)

2. Government to Businesses (G2B)
3. Government to Employees (G2E)

In 2003 the second action plan was launched. The second e-Government Action Plan was to achieve three distinct goals by 2007 (IDA 2004):

1. Delighted Customers
 - Implement 12 more cross-agency integrated e-services;
 - have 90% of the Government's customers use e-services at least once a year; and
 - have 90% of these users satisfied with the overall quality of e-services.
2. Connected Citizens
 - Explain public policies and their rationale online; and
 - Provide another channel for public feedback on policy formulation and review.
3. A Networked Government
 - Transcend organisational boundaries and evolve into a knowledge enterprise where collective knowledge is harnessed effectively to add greater value to customers and enhance service quality. A government-wide policy on data protection ensures the privacy rights of users.

- World Bank

The comparator jurisdictions: Victoria, Singapore and Finland are chosen in this study based on factors of commonality as described. These factors of commonality will be based on information published by the World Bank. The information published by the World Bank being the foundation of the comparator study; an attempt will be made to gain independent comment during the interview process from a suitably qualified GEMSD representative at the World Bank.

4.6.4 About the comparators

With an average of a decade of experience or more, Victoria, Singapore and Finland are all high GEMSD capacity users according to United Nations Online Network in Public Administration and Finance (UNPAN) (2001) in their 2001 global e-government index. As such they are amongst the top 13 practitioners of GEMSD worldwide.

This status is re-enforced by the World Bank's evaluation of e-government and m-government sites according to Bhathagn (2002).

Below in table 2 is a summarised version of Victoria and its comparators:

Victoria	Finland	Singapore
Vic One (1996) and government online	1985 Citizen ID program	Singapore One (1998)
Maxi Project pilots (1998)	Decision-in-principle digital ID for Finland 1998, Citizen guide Portal	eCitizen initiative (1999)
Connecting Victoria (1999)	(1999) EID secure Transactions	1 st Egov action plan (2000)
Victoria (2001) Putting people in the centre (2002)	JUNA project eEurope action plan (2003)	2 nd Egov action plan (2003) SingPass authentication and logins for all citizens
		(2006) eCitizen centre pilots potential of fully interactive GEMSD

Table 2 Summary of Victorian and comparator jurisdictions

4.7 Research technique - long interview

According to Tan and Hunter (2002), the long interview, in-depth interview or narrative inquiry, is a qualitative research approach, which documents and analyses individual's experiences and personal accounts of a specific discourse of phenomena or phenomenon. They conclude that the approach has been employed successfully to reveal patterns of social positioning emerging under the banner of information systems.

The interview technique utilised in this study was based on McCracken's (1999) 'long interview technique.' The technique enables research participants to reflect upon the domain of discourse in a relatively unbiased and free-flowing manner.

In selecting a suitable method of qualitative interview the researcher selected the long interview technique as proposed by McCracken (1999). The choice was identified as

a systemic instrument of inquiry with the flexibility and opportunity for interviewees to expand on their personal experiences and provide greater insight into GEMSD experiences. When compared with more traditional investigation instruments, such as surveys, and questionnaires, the long interview was assessed as the most likely to take advantage of a select group of participants and draw maximum study data.

4.7.1 Question design

Factors affecting the question design for this investigation include: the need to construct interview questions directly addressing the success factors identified in the GEMSD model as outlined in the literature review ‘success factors’ and the research questions. Concurrently allowing the interviewees scope to describe their experiences of GEMSD and their respective realities of the phenomenon.

The literature revealed six groupings of substantial significance and subsequently categorised as AOS, directly relating to the GEMSD model. Each of the significant groupings had further sub-questions of particular interest, which necessitated investigation in field interviews. A total of twenty-eight question concepts were derived. Question construction was framed around the twenty-eight conceptual areas forming the interview questions.

Utilising McCracken’s technique of long interview required two main styles of question during the interview. Firstly, ‘grand tour’ or ‘big picture’ questions were constructed around the twenty-eight concepts, these questions were the basis of the interview. They were general and non-directive in nature, and enable the interviewee to specify the substance of the response. It was planned to utilise ‘prompt’ questions, throughout the interview to enable the researcher to delve deeper into participant responses to the grand tour questions. The grand tour questions formed the basis for the standardised interview. This procedure was considered the most suitable for the study of GEMSD.

The questions were a combination of descriptive, normative, relationship, difference and open-ended questions addressing each of the areas of significance.

The descriptive questions are typified by ‘what is’ or ‘what are’ questions.

Normative questions tended to quantify with 'how well' or 'what percentage' type questioning. Relationship questions identified a correlation between two or more variables with 'what is the relationship between A and B,' or 'does A affect B or C,' type interrogation. Whereas different questions solicit identifiable variation between comparators with 'is there a difference between' or 'are there similarities between' questioning. The open-ended questions generally ask for opinion or personal reality of a situation or phenomena. These are typified with 'in your opinion' or 'what do you consider' questioning. These questions and informed consent forms were emailed to interviewees prior to interview to maximise the likelihood of considered and complete responses.

A thorough review of the interview transcripts led to the identification of emerging themes within the new phenomenon of GEMSD. The themes related directly to aspects of the model discovered in the review of literature and ex-post facto analysis. Further the 'grand-tour' or 'big picture' questions allowed for further elaboration and study discovery beyond the review of literature.

4.7.2 Identifying case study interviewees

In the process of satisfying the research design, it was necessary to select interviewees from Victoria for the local case study and from overseas comparator countries. Further it was necessary to develop and quantify inclusion criteria to enable the purposive sampling process. Purposive sampling was employed to enable the researcher to use their knowledge of the population to locate the most useful informants.

The core criterion for appropriate participation in the study was related experience in the field. As GEMSD has been a recent trend in government management according to Traummuller and Lenk (2002), with a narrow history and has few practitioners with experience beyond the past five to ten years the population choice was.

Consequently the criteria were:

1. Participants must have been involved in the GEMSD process for at least five years.
2. Participants must have been able to provide expert opinion on one or more areas of the instrument groupings.
3. Participants had to be available for follow-up interviews if required.

In order to obtain participants that fulfil these criteria, a combination of internet investigation and recommendation by senior government officials were used. Once participants were determined reflective biographies were gathered regarding their area of expertise and current role.

4.8 Data collection

Prior to interviews, all interviewees, local and global were provided with a copy of the interview questions via email. For global participants a controlled variation in the interview instrument was achieved by replacing the word Victoria with the name of the comparator country or organisation. The multi-level interviews were completed over twelve months from February 2004 to February 2005. These questions were emailed to the World Bank for expert and independent comment. Extenuating circumstances caused a delay in the write-up of data and was of concern to the researcher. As a result of the unforeseeable delay the original interview data was 3 years old towards the completion of the study. In consideration of this delay a subsequent set of telephone conversations were conducted over a two week period in October 2008 to re-fresh the data and identify any significant changes in opinion or experience. With an 89% contact rate, (one interviewee had retired and the other had changed roles) the remaining interviewees confirmed that interview content was still relevant. All interviewees confirmed their responses were still current and consistent with their experiences. However the confirmatory telephone interviews did reveal subtle changes in use of medium with more services aiming for mobile platform delivery over the next three to five years. In addition to contacting the confirmatory interviews all available Victorian documentation repositories were double checked and data amended to ensure accuracy of the study.

The environment in which the original local interviews were conducted was a variety of state government offices scattered across the city of Melbourne. On each occasion every attempt was made to organise meeting rooms, conference rooms or offices that reduced the likelihood of external interference from telephones, colleagues and other distractions during the interview process. Similar provisions were made to ensure the subsequent confirmatory telephone interviews were not subject to distraction or influence also. In Singapore, the researcher was able to interview a suitable subject whilst visiting Singapore. The Singapore interview was conducted at the premises of

Crimson Logic a wholly government owned enterprise. All interviews were recorded using audio tape following participants' permission. These interview recordings were transcribed and used for data analysis. Responses from Finland and the World Bank were via email and Voice Over Internet Protocol (VOIP) conversation. Response to emailed interview questions was via email and formed the basis for analysis.

4.8.1 Organisation and familiarisation with data

Interviews were transcribed within five working days of the interview to ensure accuracy of content. The researcher believes the recorded interview provided a number of benefits:

1. Having transcripts of the recordings provided a better basis for content analysis.
2. It enabled direct quotation from interviewees to better demonstrate the realities communicated by the individual.
3. It enables the interviewer to focus fully on the interview content and dynamics, without the distraction of note taking.
4. Enabled a true and accurate representation of the interview.

The technique utilised in the extended case study, comparator investigation and independent comment was the long interview.

After the data was transcribed, and verification of correctness was gained from the interviewees, it was marshalled initially by interview in chronological order and a number allocated to the interview. All names and identifiable material were removed and paragraph unit numbers allocated. As data was iterative in nature, it could be analysed systematically. Later the interview data were re-organised by individual question in order to facilitate easier access to explore atypical and idiosyncratic responses or offer better opportunity for clarification and theme development. These were read and re-read prior to coding.

To manage and analyse the magnitude of data contained in this study, a suitable software tool for Computer-Aided Qualitative Data Analysis (CAQDA) was required. In selecting a suitable software solution. The researcher referred to the findings of Weitzman and Miles (1995) who suggest there are a number of considerations to be observed.

Primarily there are three fundamental areas; the ability to search, sort and link data relationships. The tool should provide a direct support to the analytical tasks of research such as reading the data in context, organising the data into useful formats and providing arguments from the data in various permutations.

Based upon Weitzman and Miles (1995) findings, Qualitative Solutions and Research (QSR) International's, Non-numerical Unstructured Data Indexing Searching & Theorising or NU*DIST program was selected over others such as Atlas/Ti, TextAnalyst, Wordstat or The Ethnograph. NUD*IST uses a hierarchical system which takes a 'top down' approach, dividing and subdividing major concepts into their constituent elements. The latest version of NUD*IST, version 6.0 is a powerful program that provides good access to the data automating a number of clerical tasks better than others for this study.

After marshalling, the data was subjected to initial or open coding in NUD*IST. A system of coding nodes was made 'in vivo' using the respondents own terms and these were used to explore relationships between responses. The nodes helped to identify the emerging themes.

Themes were identified in question order and memos made throughout the process to identify common themes, opinions and perceived realities. This was effectively a hierarchical system or 'top-down' approach. It provided a basis to breakdown major concepts and themes into smaller sections allowing examination of the constituent elements. The process of dividing and sub-dividing concepts and perceptions combined with constant memos of the transcripts allowed the researcher to analyse verbatim account readily.

A thorough review of the interview transcripts led to the identification of emerging themes within the new phenomenon of GEMSD. The themes related directly to aspects of the model discovered in the review of literature and ex-post facto analysis. Further the 'grand-tour' or 'big picture' questions allowed for further elaboration and study discovery beyond the review of literature.

4.9 Data analysis

In analysing the data collected at interview, it was necessary to organise the data into usable format. Kelly's theory of personal construct as first promulgated in 1955 deals

with relationships and the ability to interpret and predict situations based on realities collected. He further defines these by a technique of identifying the individual's repertoire of realities and comparing to other experiences to formulate a grid otherwise known as a repertory grid or rep grid. Examination of the content analysis, content coding and content themes suggested that a starting point for this research was Kelly's theory of personal construct. Recent studies by Tan and Hunter (2002) have confirmed the importance of understanding the cognition of users and information systems (IS). They argue that the organisational cognition is a critical element in a variety of IS contexts and that cognitive mapping through long interview and narrative inquiry is an important aspect of data analysis and understanding the individual phenomenon or phenomena.

The mapping and organising of interview data is a sizable task as shown in Table 3.

- | |
|--|
| <ul style="list-style-type: none">• Exploration of relationships between categories.• Refinement of themes and categories.• Development of theory and incorporation of pre-existing knowledge.• Testing of theory against the data.• Report writing, including excerpts from original data if appropriate (eg quotes from interviews). |
|--|

Table 3 Mapping and organising interview data (source: Lacey, A. Luff, D. Trent Focus for Research and Development in Primary Health Care: An Introduction to Qualitative Analysis. Trent Focus, 2001) (Lacey and Luff 2001)

4.10 Trustworthiness of the research

According to Pickard and Dixon (2004) the quality of research based interpretive paradigm is dependant upon the 'trustworthiness' of the investigation. They continue to clarify trustworthiness as being assessed by four essential criteria:

1. Credibility;
2. Dependability;
3. Transferability and;
4. Confirmability.

Credibility is the analysis of the data being reviewed by the participants for a match to their realities. Dependability is established by an inquiry audit by an external auditor to examine the inquiry process. Transferability is the ability to apply the data to other

contexts and confirm ability is being able to limit the researcher's bias by tracing the results back to the original data.

It is considered that this study conforms to all four criteria. Credibility has been achieved by referring information transcribed after interview to all local interview participants for comment and approval. The overseas interviews in Finland and the World Bank were conducted via the internet combining voice over internet protocol telephone conversations and emails were used to validate respondent views of the interviews. The dependability was established by appointing an external process auditor extra to those already involved in the thesis process. This person was responsible for the ensuring accuracy of the inquiry process by examining the steps involved. Conformity to the transferability criteria was achieved by the comparator study of Finland and Singapore and application of the model. Confirmability is available through the availability of original data on request.

4.11 Ethics

In any research it is paramount that ethical issues be addressed in relation to accuracy, honesty and competency throughout the process. The researcher has an obligation to gather valid data, present the data in an honest and correct manner, and demonstrate a competency during the research. Shaugnessy and Zechmeister (1990) contend that as part of a researcher integrity it is important to acknowledge the contribution of participants and data sources, moreover it is necessary to consider the consequences to society in any research endeavour. The researcher has consciously considered these issues and carefully observed their intent throughout the study.

As this thesis is heavily dependant on interview and opinion it would be negligent not to be mindful of the ethical issues associated with the process of interview and responsible use of resultant data. All interviewees involved in this thesis were afforded full autonomy in relation to participation in the interview process. This was effected by each interviewee being provided with a full disclosure of the study purpose, interview questions, a lengthy explanation of the time requirements and an informed consent form, as prescribed by the Victoria University Ethics Committee. The signed informed consent form was required prior to interviews being conducted. This ensured respect of participants' autonomy to choose participation in the study.

Thus all interviews and questionnaires were conducted in accordance with the Australian National Statement on Ethical Conduct in Research Involving Humans (Australian-Government 1999) and with Victoria University's Ethics Committee standards. Permission was sought and given by the Victorian government to interview its employees, refer appendix A2. All interviewees were made aware of their rights and written permission was supplied by all participants thereby satisfying the rigors of informed consent. All Victorian and Singaporean interviews were audio recorded and transcribed. Finland and World Bank interviews were conducted via the internet and email responses accumulated and condensed. All interviewees were given copies of the resulting transcripts and asked to confirm the correctness of the data obtained at interview.

4.12 Conclusion

This chapter has explained the research methodology utilised in the investigation of a success factors model for GEMSD. Further it has discussed the underlying epistemology or philosophical foundation, assumptions or ontology and validity of the research. This chapter has specifically addressed the following questions:

1. What is the research epistemology for this research?
2. What are the assumptions or ontology on which this research is based?
3. What are the expected objectives, aims or outcomes of the research?
4. Which research method was utilised and why it was appropriate?

The next chapter (chapter 5) deals with data collection and analysis. It will deal with issues such as:

1. The sample population;
2. Data collection;
3. Analysis of data; and
4. Results.

CHAPTER 5

DATA COLLECTION AND THEMATIC ANALYSIS

5.1 Introduction

The previous chapter outlined the method for the study. The purpose of this chapter is to present the collected data. It outlines and explains the method of data collection and describes the participants selected for the in-depth interview investigation of a success factors model for GEMSD. Further it provides the results of data, after a thematic analysis of interview transcripts.

5.2 Data collection locally and overseas

As indicated in chapter four, the principal methods employed in the collection of data were a review of the relevant literature; an extended case study of the Victorian experience; and a comparison with experiences in Finland and Singapore. Further verification was sought by obtaining independent comment from the World Bank. After gaining executive permission from the Victorian government, extensive use was made of the Victorian government's eGovernment resource centre, both online and at Multimedia Victoria, for further review. The long interview technique was utilised in the extended case study of interviewees, comparator investigation in Singapore and Finland and independent comment from the World Bank. All participants qualified according to the three major selection criteria as specified in section 4.7.2 of chapter 4.

5.2.1 Instrument employed and interview environment

The participants were provided with a copy of the interview questions prior to interview and made aware of their rights in relation to ethics and recording of interviews. The environment in which the Victorian interviews were conducted within a variety of state government offices scattered across the city of Melbourne and inner suburban areas. The Singapore interview was conducted at the premises of Crimson Logic, a wholly government-owned enterprise. Efforts were made to organise meeting rooms, conference rooms or offices that reduced the likelihood of external interference from telephones, colleagues and other distractions during the interview process. Other overseas interviews in Finland and the World Bank were conducted via the internet combining voice over internet protocol telephone

conversations and emails validating respondent views of the interviews. The results were transcribed and verified with interviewees. Once the data was verified it was coded and each interviewee was allocated a participant number to promote anonymity.

5.2.2 Interview and response participation

Typically the level of participation at interview was good. Criteria described in chapter 4, section 4.7.2, were employed to identify experienced and qualified interviewees. This process required considerable research within the Victorian government. Of the 19 suitable interviewees identified, 17 were available for interview and all participated willingly in the study.

Overseas comparators were harder to identify and required several months of contact via email and telephone to establish a list of possible interviewees. Those qualified, able and willing to be interviewed were narrowed to one expert from each country, and each participated willingly.

In providing answers at the interview, very few interviewees were confident in answering all aspects of the topics covered in the interview and many felt they were not qualified to answer particular questions outside of their scope of experience or reality.

Data was collected and interviews were numbered to maintain anonymity and impartial assessment. A summary of participation can be seen in the Table 4 matrix below

Interviewee	Questions																																				
	Q1	Q2a	Q2b	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10a	Q10b	Q11a	Q11b	Q12a	Q12b	Q13a	Q13b	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21a	Q21b	Q22	Q23a	Q23b	Q24	Q25	Q26	Q27			
1	A	A	A	A	A	A	A	A	A	A	N	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
2	A	A	A	D	A	A	A	A	A	A	N	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	U	A	A	U	A			
3	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	D	A	A	A	A	A	N	A	N	A	A	A	A	A	A	A	A	A	A	A		
4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
5	A	A	U	A	A	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	U	D	D	A	A	A	A	A	A	A	A	A	A	
8	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
9	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	U	A	A	A	A	A	A	A	A	A	
10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
11	A	A	U	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	U	A	D	A	A	A	A	A	A	A	A	A	A	A	
12	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	A	U	A	A	N	U	A	A	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	A	A	A	A
14	A	A	A	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	D	A	A	U	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
15	A	A	D	A	A	A	A	A	D	A	A	A	A	A	A	D	D	D	A	A	A	A	A	A	A	A	A	A	U	D	D	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	D	A	A	A	A	A	A	A	A	U	A	A	A	A
17	A	A	A	N	A	A	A	A	A	A	U	A	D	A	A	A	A	U	D	A	N	N	A	A	A	A	A	N	A	N	N	N	N	N	N	A	A

Table 4 Interview and response participation matrix for this thesis

As depicted above questions 1, 2, 4, 6, 7, 8, 15, 22, and 27 were answered by all 17 interviewees. The remaining questions had between 1 and 3 interviewees not answering, undecided or with no opinion. This represents an overall response rate of 91.73% and is considered acceptable.

5.3 Interview data analysis

Data collected from the interviews, both locally and globally, were transcribed. From the transcriptions the data was analysed using thematic content analysis. The questions are grouped by an area of significance as determined by the model proposed in chapter 3.

Throughout the data analysis, validity has been tied to the researcher's ability to converge the understanding of the culture within the culture's view of self-meaning. In ensuring validity, a check back to the data source has been achieved by providing interviewees with copies of transcripts and referral to only those agreed transcripts throughout the process. Similarly, the researcher overcame the problem of viewing all items as having equal value, by considering the insights revealed in a contextual form rather than based on frequency alone.

Whilst the analysis was data driven, the frequency in itself was not accepted as the sole valid or reliable indicator of importance. The participants responsible for valid views or quotations have been noted in brackets () during the analysis of each question and frequency is indicated by multiple numbers appearing inside these brackets. To ensure a consistency of approach the researcher has adopted eight rules of thematic analysis as suggested by Patton (1990); Miles and Huberman (1994), in a comprehensive analysis of the interview data. The eight rules are summarised below:

- 1) Count, look for repetition
- 2) Note themes, patterns, look for underlying similarities
- 3) Make metaphors analogies or symbols for what is happening
- 4) Check to see if single variable is really a number of variables
- 5) Connect particular to general
- 6) Note differences/ similarities
- 7) Note trigger, connecting or mediating variables
- 8) Note if patterns in data resemble theories/ concepts.

This process required ‘careful reading and re-reading of the data’ (Rice and Ezzy, 1999, p258) for the coding of themes that were sorted and re-sorted to form the data summaries. Six levels of interest from the model were addressed and considered as the areas of significance. They were addressed by a number of questions. The data summaries were grouped in these six areas. The individual questions are highlighted in pale blue text in sections 5.4 through 5.9 of this chapter, commencing with re-engineering government for electronic and mobile interfaces. The questions were drawn directly from the model as outlined in chapter 3.

Data is presented as summaries of the response to each question, grouped into the areas of significance developed from the model. These six areas are:

1. Business re-engineering
2. Education
3. Acceptance
4. Security
5. Cost
6. Access.

5.4 Re-engineering government for electronic and mobile interfaces

This section addresses the five questions asked of the participants that relate to the re-engineering of the government for GEMSD.

5.4.1 Question 1.

In Government Electronic and Mobile Service Delivery (GEMSD) projects, do you consider it necessary to have centralised authority and political support to successfully re-engineer the relationship with the public and within government agencies? Or can this be achieved successfully with decentralised control and limited political intervention?

All participants answered this question. Overall centralised authority was considered ‘important (1)’ for achieving (success) and ‘efficacy (6)’, by ‘providing standards (9)’, a framework and authority to ‘get stuff done (1)’. This in turn ‘provides strength (5)’ and ‘forces any issues (4)’. However it was also considered important to balance centralised authority with flexibility that ‘allows a level of autonomy (1)’. This concept was put in terms of ‘a central responsibility with delegated authority to drive it (7)’. It was noted that a ‘centralised authority requires mandate (1)’ to function effectively.

Further, three participants (1, 4, and 6) expressed a view that centralised authority reduces problems, challenges and duplication of effort and can be used to provide support for small business. It also increases the ability to provide information to the public so ‘they know what is being talked about (6)’. However, participant 10 considered it was not suitable for all initiatives, ‘until they are up and running (10)’. There is one major issue indicated for the development of centralised authority and that is due to the scale of centralisation. In that the larger the project, the greater the anticipated difficulty of getting it ‘off the ground due to pragmatic issues (12)’, such as resistance.

Participant 3 felt that centralised authority was not appropriate quoting issues of privacy and standards as major concerns and inhibitors. While participant 2 expressed the view that a ‘local champion’ with government support was more suitable. Five participants (3, 4, 10, 12 and 13) believed political support, or a champion, is important for reasons of providing a stable environment through dedicated resources, funding, vision, encouragement and ‘getting the project on the agenda (12)’. The combination of strong political commitment, secretary commitment and money provides a useful and practical combination according to participant 10.

5.4.2 Question 2a and 2b.

Q2a. What characteristics have you found important in the legal and regulatory environment to promote successful GEMSD projects?

Q2b. What impediments have you encountered in the legal and regulatory environment?

All participants answered question 2a and fourteen answered question 2b. However, in combining responses from questions 2a and 2b a number of categories of interest were determined from the data collected, the primary categories identified were:

1. The need to change due to the delivery service being electronic or mobile, rather than paper transactions;
2. Any legislative change is only necessary for those issues such as Privacy, Security, Form design; and
3. The process of legislation, on the scale necessary, was a considerable issue also.

A limited number of participants have had to change or re-draft legislation relating to GEMSD, '(we) have amended the existing legislation so that it then caters for both paper and electronic (1)' transactions. Others expressed the view for a need for some new legislation to occur. One participant expressed the view that there was too much worrying about the issue of legislation and that service delivery was effectively the same as always, 'just in a different form (9)', however the majority of the participants expressed the view that the change in form (electronically or mobile) creates issues which resulted in the major issue of processing legislative change. This process of change specifically arises from using electronic and mobile forms in service delivery. If these were not an issue for GEMSD then no legislative change is required 'assuming that privacy is not an issue and requires no legislative change (10)'. However, different to participant ten's belief, privacy was considered an important issue 'we have all got to work around that now (1)'. It was considered both an 'enabler and dis-enabler (2)' for successful GEMSD projects, providing reasonable protection for individuals but simultaneously being a regulatory burden to implementers. This was indicated to be due to the poor definitions of 'public good or benefit (3)', the view being that 'privacy principles do not fully reflect the balance between public good and private interest (3)'. It was seen to be important to consider general information and specific personal information (3) 'it is that grey area that is causing some issues (12)'. 'The interpretation of privacy and application of privacy in Victoria is perhaps a bit of an impediment to being able to offer a public service that is useful to them (12)'. Importantly the complexity of privacy policy was highlighted as, 'incredibly complex law to get past (5)' 'you have got 3-4 privacy regimes within one project (2)' plus 'now we are supposed to be globally centric... that is what the laws have to relate to (5)' which highlights the increased complexity of privacy as a core issue for successful GEMSD.

In total five participants held the view that privacy laws were important but posed an unequitable burden on GEMSD projects (2, 3, 5, 12 and 14). Similarly two (11 and 12) local participants deemed security as part of the 'counter terrorism and identify fraud changed and hardened (11)' 'trying to satisfy a risk averse department in terms of audit trails and ability to have enforceable evidence (11)'. Thus privacy issues verses security issues based on verifying identity and audit trails can be considered another onerous task for GEMSD practitioners.

Processing forms (4 and 11) was also an issue for electronic transactions because the forms themselves are often enshrined or locked in legislation and thus can only be utilised as ‘PDF so people can download them, fill them in by hand and either put them in the fax machine or mail it (4)’. Thus severely limits the GEMSD service interaction at this level and needs to be empowered by a regulatory instrument that sets out the objective parameters rather than ‘hardwired documents’.

One participant was concerned about costs and government maintaining its neutrality in pricing ‘Pricing, the issue of statutory and non statutory fees and competitive neutrality (1),’ there are a ‘number of issues around ensuring that what we develop is not found to be anticompetitive (1),’ implying government must not artificially affect the market place with the introduction of GEMSD facilities or products. Thereby ensuring market stability is maintained after the initial GEMSD implementations.

The process of legislation change itself was seen as complex and time consuming (5). It was considered important to minimise the process as much as possible by ‘consultation with all peak bodies,’ ‘leverage off existing legislation’ and ‘have to think hard about how we can streamline the amount of reform (1)’. ‘How long it takes to get a legal thing through parliament is amazing... and how many ramifications it has with the Australian law and international law (5)’. Further the ‘subtlety in the courts. How they want some things to happen...therefore there is impediments in their mind of thinking and there have been changes in laws happen only because some groups of judges have dispersed (5)’ was an impediment to the process. Participant 1 surmised, ‘e-government initiative is an interesting one because we are moving into a space to be and it delivers a lot of benefits across industry (1).’ One overseas participant noted a jurisdictional problem, ‘The complication arises when you do cross boarder whereby your Electronic Transaction Act does not necessarily apply (OS2)’.

5.4.3 Question 3.

[How would you rate your experience with single access portals with 'one stop shopping' for online government services compared with individual department access points?](#)

While two of the participants indicated they did not have enough experience (1 and 2) to adequately answer this question, the majority favoured a single portal approach.

There were a number of concerns expressed over the requirement of good quality portals and the development issues associated with providing those portals. In one group of participants these issues were enough for them to prefer individual sites (3, 9, 10, and 11).

Thus the appropriateness of single portal is dependant on the quality with which it has been created or delivered, and in turn, depends on the resources (financial and time) allocated to its development and implementation. Alternatively it is necessary to consider: if search engines do the job adequately, why waste the resources on a single entry point or portal? 'I use google for almost everything now (3)' 'I went to google and could not find it, so I went to Victoria online and I found it (4)'. Overall most participants could not adequately answer this phenomenon referring to it as being a necessary for government policy or to promote a single face of government.

Quality was definitely seen as a major issue with user friendliness, navigation, familiarity (changing structure). An example cited was the American '3-11 service' which is a good example with a comprehensive planned delivery service inbuilt to the system (3). Another offered we 'managed to catalogue across the three levels of government and aggregate all that information services together in one style has been far more effective (4)'. In relation to user friendliness one participant suggested 'people do not identify which level of government delivers what service (4)', but rather, view government as one entity. An alternate opinion of merit was 'complexity, time and the cost of developing especially with the quality of search engines available renders many govt portals useless (9).'

5.4.4 Question 4.

[How would you compare the multi jurisdictional/Departmental nature of GEMSD single access with service levels previously provided by individual or separate agencies?](#)

All participants answered this question. Overall participants felt that the multi jurisdictional nature was a good idea, however many felt they had inadequate experience to comment, for while there is some move in that direction its development was still in its 'infancy'.

Beneficial characteristic included that it is 'easier (10)' for users and that it was important for the users to have a 'whole-of-government view (11).' However it was

also pointed out that ‘parallel processes of access’ was important for those familiar with a department and those who are not and ‘do not know where to start (12)’. However the concern was if we ‘lose that capacity for individual initiatives to show excellence and to do things in a slightly different ways. The innovation goes right out (9).’

Four participants (4, 6, 9, and 11) were conscious of issues relating to the implementation process. Primarily they believed there is a need for ‘implementation to be done on a comprehensive project basis (6)’ and that this comprehensive process can be hampered by ‘bureaucracy issues (4)’ and the ‘departmental duplication throughout the process (9)’. Similarly it was held all parties require a ‘clear sense of the purpose of the site (11)’.

The Overseas participants supported the multi Jurisdictional policy transfer capability as the ‘same look and feel for service makes use easier (OS1)’ for users. Suggesting, that good public promotion ensures ‘every (country reference) knows that that should be a starting point (OS2).’ ‘My general impression is that one-stop shop solutions are better way to provide GEMSD solution, especially when hierarchal organisation of the government sites allows providing intuitive way to find the relevant piece of information (OS3).’

5.4.5 Question 5.

[Does the introduction of Information and Communication Technologies \(ICT\) enhance or complicate legacy systems; should they be kept separate?](#)

The general opinion from local participants was ICT enhances legacy systems with the view that ‘the majority should be using some smart ICT, (It) should allow for smarter ways of doing things (5)’. It is seen as a ‘liberating technique (3)’ and ‘should be enhanced by new mobile technologies and web services (7)’. ‘The idea of keeping things in separate non-communicating silos is something that is not consistent with moving government forward (8).’

The transition process was an important element (not well implemented currently) with one participant noting that it may take time but eventually ICT will replace legacy systems, with a combination of enhancing and redundancy of legacy systems ‘some cases enhance it in other cases the legacy system will be killed off (6)’. The

process 'requires web service and mobile standards... for manipulating and making use of data (3)' more consistent. One participant suggested they were trying to overcome this problem, '(we are) trying to reconcile database entries... we have built in standardised interfaces in those sort of things that helps there (10).' Also suggesting 'a lot of databases they are using will probably not integrate they will probably leave stand alone (10)' identifying the single silo nature of some systems. There was a strong emphasis by three participants (2, 5 and 8) on 'change culture', suggesting 'change's probably the hardest issue' believing 'change management (2)' to be the hardest issue of all. Many comments emerged on while it will enhance the system, (why else would it be implemented) a transition time was primarily due to issues of change. The change process itself/ reconciling data between databases (identification problem) will have to be dealt with but were seen as secondary to cultural adjustment.

'Legacy systems ultimately have to migrate, it is a transitional exercise and the government has to [do] for efficiency' some old systems work fine and ridging technologies useful not practical to up data all –cost (12). A lone participant felt it [porting older systems to new] was not value for money (1)

5.4.6 Summary of re-engineering government for electronic and mobile interfaces.

In summarising the business re-engineering factor reflected in questions 1-5, not all respondents agreed about re-engineering government, but generally they agreed with the model that centralised authority with political support, cohesive legal and regulatory environment, single access portal, supported the success of GEMSD. However, practical issues meant that these ideals where not effectively being implemented, and that there needs to a reality check in relation to the perceived ideals. For example while a centralized authority is beneficial there is a requirement for flexibility and autonomy in individual departments or agencies.

A practical reality ensures that it is not easy to be developed despite benefits. If departments and agencies are going to implement GEMSD they need to seriously consider what is required and apply the required resources to do a good job first time round. Many consider there are examples of good, working systems, but there is a need to avoid duplicity.

Characteristics of the local experience are: it is important to maintain some flexibility with initiatives and innovations; also projects should be comprehensive, of good quality and user friendly; implementation is still seen to be in its infancy requiring careful planning about what needs to be done and the large amounts of resources required to facilitate such endeavours.

5.5 GEMSD education and understanding

This section addresses the five questions asked of the participants that relate to the education aspects of the model:

5.5.1 Question 6.

[Do you believe there been any noticeable reduction in fully duplicated service delivery systems with improvements have occurred in ICT literacy over the past 5 years](#)

All participants answered this question. It evoked a strong response from all of the local participants. The interview data revealed two main streams of reality in relation to this question; firstly there will always be fully duplicated services; and secondly some services will disappear from the traditional office or shopfront delivery mechanism and be totally absorbed by GEMSD. The division on this question was eight believed some services will disappear from shopfronts into GEMSD (1, 2, 3, 4, 5, 6, 7 and 14) and five believing a fully duplicated system will remain (8, 9, 10, 11 and 13), one avoided a commitment either way (12). All agreed ICT up-take and literacy had improved markedly over the past five years. One department had conducted an 'integrated demographic profiling project (4)' to ascertain literacy and ICT up-take resulting in '50% GEMSD usage, 18% telephone usage and 18% over the counter' with only 14% via mail or fax.

Regardless of their overall reality of the situation, six were able to cite simple examples of a reduction in 'over-the-counter' transactions as a direct result of GEMSD and improved customer ICT literacy (3, 5, 6, 7, 8, and 13). These ranged from 'I would say the majority have surprised me in how well they have become (GEMSD) savvy particularly in the last couple of years and I think what I have seen the accelerated rate of savvyness or education (11),' to 'in government Vic-Roads (is a) good example, getting a licence you used to have to go to certain places and sit down and do your licence, now you sit in front of a machine you now have got two people in that office that look after everybody coming in, they can do about 25 licence

tests per day, before they needed one person per person that was coming in, so they needed about 15 people those sort of things are happening everywhere (5).’

The issue of reallocation of resources in proportion to reduced ‘over-the-counter’ transactions provoked more strong opinion from local participants. Three used the banking sector analogy citing the introduction of ATMs and the reduction in branch banking staff (5, 6 and 7) as a similar scenario to government, however four (5, 7, 9, and 10) participants were very conscious of the cultural and political issues associated with ‘the rationalisation of delivery channels (and) the implications it had to have on staffing (7).’ Two (9 and 10) continued by saying in the government arena ‘no-one is game enough by policy (10)’ to actively reallocate resources at present. It was generally hoped the ‘evolution’ of GEMSD would resolve the issue (9). An example was cited ‘City of Melbourne they all of a sudden could pay their parking fines online on MAXI, before that you could write a cheque or stand in a line, straight away who wants to stand in a line and get another ticket while you are there, who wants to send a cheque in, so you have got to have a 35% uptake in the first three months, consequently you had people standing around doing nothing question is what do you do (10)?’

All three overseas participants echoed local opinion citing the banking analogy, and suggesting customers were not only becoming more ICT literate, but in fact were dependant on GEMSD in many areas now (OS2).

5.5.2 Question 7.

[Traditionally services have been delivered 9.00am -5.00pm Monday to Friday. Do you believe government users have made use of 7/24 access to government. What evidence is there to support this?](#)

All participants answered this question. All local participants acknowledged good customer use and up-take of 7/24 GEMSD access and good statistical record keeping of usage patterns to enable accurate comment generally through third party products such as ‘Red Sheriff’ or ‘Web Trends.’ Of these, seven indicated extensive usage over weekend periods (1, 3, 5, 7, 12, 13 and 14) qualifying that this level of service was previously unavailable in most departments or agencies prior to the introduction of GEMSD. One of this group consulted electronic records during the interview and continued to say that of the total usage in their department 40% was over weekends

‘my understanding is that people get on it (GEMSD) all sorts of times to look at stuff...(checked computer) 40% on weekends, there you go (1).’

Four highlighted large increases in night usage patterns since the introduction of GEMSD (3, 5, 12, and 14). Only one participant acknowledged access and up-take in the early morning period primarily due to the work patterns of their customers ‘our surveyors start at 7.00am in the morning (12).’ Also the same participant and one other were the only two to comment on the hidden benefit of ‘better value for the public dollar’ by provision of these ‘extra service hours’ describing is as ‘really cheap (12)’ or ‘(excellent) limited resource provisioning (8)’ when compared with traditional service delivery mechanisms in having to maintain offices and staff them from 9.00am to 5.00pm Monday to Friday.

All overseas participants responded well to this question indicating their customers had made use of GEMSD 7/24 access. One overseas participant went further and provided a twenty-four hour graphical analysis of a typical government department for the month of January 2004 in their country seen in Figure 23 below:

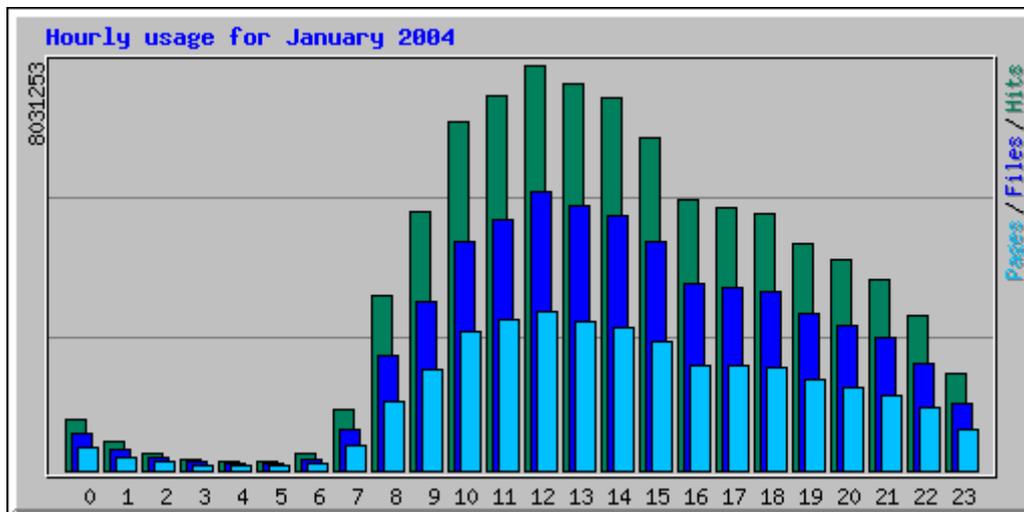


Figure 23 Twenty-four hour analysis of usage patterns (source: overseas - confidential)
 This highlights while most usage is during traditional office hours, a considerable percentage of after hours use of services between 6.00pm and 11.00pm is utilised (OS1). Another overseas participant expanded their comments suggesting that simple transactional tasks were increasing during after hours access ‘(the) most used ones are renewing driving license, change of address (with transportation and tax authorities), tax filing, birth certificate ordering (OS3).’

5.5.3 Question 8.

How is government customer-acceptance, influenced the provision of a standard operating environment (SOE)?

All local participants answered this question at length. The most common themes amongst participant responses were: providing the best interface for customers; lack of commonality in structure and competing technology syndrome.

The best interface for customers theme was divided into two sub-themes: reducing user service interface to ‘lowest common denominator (12)’ or ‘being prescriptive to professional users rather than mums and dads (1).’ Both these sub-themes were subscribed to by eleven participants. Seven supported the ‘lowest common denominator theme (3, 4, 5, 6, 7, 11 and 12) and five the prescriptive approach (1, 2, 9, 13 and 14). The later group included product specific and mobile service platforms which had a higher level of SOE requirement when compared to standard web based access.

Both these sub-themes were characterised by a comment from a local participant ‘you know we are living in a Microsoft society (4).’ Of the people interviewed, four (4, 7, 8, and 10) were concerned as to which level of Microsoft software users were utilising ‘we had to find out what people were using (7)’ in order to determine the ‘lowest common denominator’ service for web-based or mobile delivery interface.

Lack of commonality was evident in a number of comments, also it was the first identification of internal and external government customers: ‘what happened, too many people started to make their own web pages idio-centric only and that was frustrating to a lot of people (5);’ ‘we need to put standards in now (4);’ ‘the trend is towards standardising and maturing... less change, less difference (8);’ ‘try and maintain a standard interface to the customer be they internal or external (9).’ This theme was across most departments and agencies and regardless of delivery platform web based or mobile based.

One local participant was very aware of competing technology syndrome and the need to be seen as product and vendor independent. ‘We are headed for our next version... open source, open platform, vendor neutral approaches... otherwise they are seen to be endorsing the product... I think (it) is fundamental for government (12).’

Overseas participants responded well to this question. It seemed the overseas experiences were more advanced than local with comments such as ‘we publish technical architecture and interface standard recommendations every two years (OS1).’ The same participant continued to suggest that GEMSD platforms were tied to vendor driven product and unable to have SOE ‘Vendors are pretty to active to show new technologies and especially in the use of mobile phone technologies (SMS, WAP) has been vendor driven (OS1)’. This view was then extended to illustrate that this situation may be the result of joint venture or public-private partnerships ‘the mobile tram tickets and parking fee systems are operated by private companies and the cities only pay an agreed transaction fee (OS1),’ thereby removing them from the SOE decision and endorsing proprietary product.

The other overseas participants acknowledged SOE as the intention of their respective governments in forward planning, with OS2 identifying the need to incorporate a ‘future proofing provision for a standard operating environment (OS2).’ Further they were keen to note ‘government could be very prescriptive in what they require of their users, which is probably going to create a digital divide, mum and dad users who cannot afford the latest equipment (OS2).’

5.5.4 Question 9.

[Agency specific data and service warehousing is giving way to the re-definition of government products and services and more multi jurisdictional policy transfer to constituents. What effect does this have within government agencies?](#)

‘There is a classical territorial thing going on (1),’ was the major theme emanating from this question according to local participants. Of those who answered the question, six (1, 2, 5, 6, 7, and 8) noted the presence of ‘turf wars (6)’ or territorial disputes where ‘individual departments will fight their colleagues (8)’ and ‘people are still keeping the information for themselves (5).’ In the few instances where local departments or agencies had to participate in multi-jurisdictional practices with other states or local government, opinion reflected a strong sense of recognition that the results out-weighed the process negatives and was an emergent theme across government. ‘Increasingly we are finding that pretty much everything we do has some impact outside our department and outside our space here (3).’ One participant noted the emergency services agencies had better co-operation locally and in the multi-jurisdictional practices than most, ‘You can see it hitting the doers. Emergency

services type people are quicker than anybody else because they have worked out that it is going to help them (5).’

Re-definition of government services was seen to be subject to the main theme of ‘turf wars’ with participants suggesting it ‘is enormously difficult to get a common view of what should be done (3),’ when the process is ‘hampered’ by ‘turf wars with others (1).’ It was noted by one participant that the technological aspects of data sharing or warehousing were minimal in comparison to this (2). However, three participants (8, 11, and 12) believed ‘so long as the public or the business we are dealing with can access what they need without having to have known where it comes from and without having to worry about or having to need to know how it is structured in back, does it matter (12)?’ Surmising that true GEMSD provides ‘a lot of benefit(s) in bringing those things into the one environment but it does not have to be held in the one place. It can then be distributed or accessed through a whole range of (GEMSD) mechanisms (12).’

Two overseas participants expanded on this question generally surmising that it would ‘lead to re-engineering of business processes and better cross-departmental integration (OS3).’ With one participant dreaming ‘if I was Prime Minister, I would have one database where I can access everything or put in controls (OS2).’

5.5.5 Question 10a and 10b.

Q10a. Are government users becoming more GEMSD ready and how?

Q10b. How has the introduction of GEMSD altered skill sets of government employees, and has this been successful?

Question 10a: Summary

Opinion from eleven local participants (1, 2, 3, 4, 5, 6, 8, 10, 11, 12, and 14) was that commercial, other government and private customers have become more GEMSD ready and savvy. The theme from a commercial users perspective was predominantly to make use of a potential competitive advantage ‘they operate in a very cost competitive industry and so they are very keen to utilise any advantages that technology (and GEMSD) will give them... we have been quite pleased with how technologically savvy our stakeholders have actually been (1).’

A second opinion from a commercial and private user perspective was that these users had become more literate and were demanding GEMSD ‘well you know if QANTAS go do it why can’t the Victorian government do it (6)?’

Other theme factors attributed to users becoming more GEMSD ready were the evolution of users from schools and universities to the workforce, suggesting literacy levels gained at schools and universities were being transported into the workforce and private use. This was supported by five participants (4, 5, 8, 13 and 14) ‘by default, all the kids at schools are pushing their parents whether they like it or not (4)’ and ‘they [students] are being very literate and showing their parents how to use it (5).’

A government pro-active theme emerged with five participants (2, 4, 5, 8, and 13) suggesting government has provided the necessary environment for better GEMSD literacy, by lowering the cost of access through cheaper broadband and more public access points, by creating awareness via ‘the strategic communications branch within the department of Premier and Cabinet (4)’, and encouraging ‘greater data speed across mobile device platforms (13).’ Surmising that generally ‘the infrastructure gap is being addressed (3).’

An inhibitor theme was identified by three local participants (4, 8 and 14) centred on access and socioeconomic issues which resulted from a user demographic profiling report ‘suggests that use of government services and information remains stagnating (4),’ due to ‘providing access to technology(s) in low socio-economic areas, areas of hardness and disadvantages generally (8),’ and ‘lack of mobile infrastructure in remote areas (14).’

Overseas participants acknowledged the need to increase user literacy but failed to comment adequately.

Question 10b: Summary

‘There are still a lot of things in government that need to be done smarter (5),’ was a common theme amongst local participants in relation to question 10b. However of those who responded to the question, eleven local participants (1, 2, 3, 4, 5, 9, 10, 11, 12, 13, and 14) agreed ‘there has been an increase in skills (1),’ with varying degrees of ‘increase’ depending upon which department or agency was examined. It was

suggested that this is due to the level of autonomy in each department, as one participant described ‘health has been a very IT literate environment for a reasonable period... I don’t know if that has been the case elsewhere. I think education is trying to grasp it (2).’

The disparity was noted in a different way concluding ‘we have become more au fait with general IT concepts... there has not been a big increase in the core IT expertise of government employees, I think what has happened we have brought it in and we have become a lot better at contract managing IT providers and often multiple providers, I do not think in-house we have increased our IT expertise that much. We have just brought it in. (1)’ This would suggest the disparity may be due to IT not being a ‘core’ business and should be contracted into government hence the increase in ‘general IT concepts’ rather than core IT skills.

Of the three local participants (6, 7, and 8) who did not think skills had improved a common theme emerged, ‘you have some real luddites at senior executive levels in IT (6),’ suggesting there was a lack of leadership at some senior executive levels. This theme was supported with comments like ‘We still have issues with PDA’s working properly in a standard operating environment, these are just ridiculous things’. I have been involved with both the private sector and working in government with government for 6-7 years now and there has not been much of a move internally (7),’ or on a more operative level, ‘no-one offered any induction training systems into all the different desktop systems that we use (8).’

An alternate opinion offered, it was difficult to convert existing staff into the required staff for successful GEMSD operation concluding ‘they have evolved and they have been very good at doing things in an ad hoc way, they have understood the business side of it, but they have not understood the IT side at all (3).’

It was noted by overseas participants that the ‘introduction of GEMSD has tremendously challenged and significantly influenced the technical skills of employees, who remain the ultimate driving force for the success of government electronic and mobile service delivery, and not technology per se (OS3).’ This highlights the need for ‘internal’ driving of GEMSD initiatives which requires

changes of employee skills without loss of motivation. Another noted ‘in the government area there is a lot of new training being done to bring the service level of staff... up to the level of literacy required by IT (OS2).’

5.5.6 Summary of GEMSD education and understanding.

In summarising education area of significance factors reflected in questions 6-10b, Victorian government documentation was plentiful in this AOS and interview data was quite detailed with all interviewees participating generously. Overall both documentation and interview data support the model.

In relation to savings and fully duplicated service delivery interview data favoured the opinion that service duplication was reducing and traditional services were giving way to GEMSD. Also the trend of integrated demographic profiling of government service users revealed a marked increase in ICT literacy. Yet again the issue of ‘turf wars’ and demarcation pervaded this AOS in three domain data. It was particularly evident in relation to the reallocation of resources resulting from the reduction in traditional service delivery mechanisms. The provision of SOE was split between operating on a lowest common denominator basis as opposed to government being prescriptive in GEMSD user requirements with the lowest common denominator theme being the stronger of the two.

With the ‘turf war’ mentality in mind the data available on redefinition of services across government was limited. However of the data available, the results of success out-weighed the negatives ones and determined an emergent theme across government.

5.6 Acceptance and embracing GEMSD

This section addresses the five questions asked of the participants that relate to the acceptance aspects of the GEMSD model:

5.6.1 Question 11a and 11b.

Q11a. Is GEMSD more transparent and open to review than traditional service delivery methods?

Q11b. Are there any audit and process benefits to be gained by maintaining previous delivery systems?

Question 11a: Summary

These questions drew good response from participants. Only two disagreed with GEMSD being more transparent and open to review (8 and 11). Their differing views

to the majority centred on ‘standards around how you deliver a product or service are not necessarily made more-clear when it is done (via GEMSD) (8).’

The majority view was that yes the electronic medium enabled greater transparency (1, 2, 3, 4, 5, 6, 7, 9, 12, 13, and 14). This was due to greater control over the data and the ability to ‘monitor the progress (1)’ more transparently. An example cited referred to ‘if you are an applicant and you want to subdivide you have no idea of the statutory application unless you ring up the council officer and spend all day on the phone... with (GEMSD) you are able to monitor progress of your application... that is more transparent than the current process (1).’ Another view suggested the information was more secure and less likely to ‘walk out the door (2)’ citing an example of radiology records or x-rays which had a habit of being taken by GPs and ‘ended up in the boot of their car (2)’ creating a need to bring patients back and repeat the process, however with digital radiology this cannot occur, thereby controlling access and promoting better record keeping.

Another view explained ‘You can manage, monitor and keep data on it [GEMSD] given it is all about electronic data and digital information you can monitor and audit it much better than you can audit somebody whose engaging somebody over a counter (6).’

Providing greater record keeping for both access and transactions; provision greater detail so you know what is done when and by whom; and overall better/easier access. Thus one can keep track of the transaction process and the capacity/tools for greater transparency.

A view expressed suggested that there was the potential for increased transparency however there was a ‘cultural or people issue to deal with (6).’ This related to the need to control access to the data by the individual(s) controlling the data. One reason expressed for this was concerns over the quality of the data and criticism related to this, another that there was in fact an ownership issue of personal information rather than government ownership of information.

Overseas experiences indicated similar finding with OS1 and OS2 agreeing with local results. OS2 elaborated and cited their ‘Trade Net System’ transferring all processes to GEMSD based systems, which in-turn enabled them to satisfy ‘PS799’ ‘which is a

security audit system (OS2),’ to help them qualify for ISO9000 certification. OS3 declined comment on this issue.

Question 11b: Summary

Overall response to this question was poor however of those who answered opinion was strong. Most held there was little value in maintaining audit and process systems from previous non-GEMSD or manual systems (2, 3, 8, 9 and 13) but rather there were process benefits through a diversity of service delivery modes which empowers flexibility.

Two (5 and 9) indicated it may be appropriate to maintain duplicity ‘during a changeover period (9).’ Of those who found value in maintaining previous systems two suggested there would be a loss of skills or ‘knowledge of process (8)’ within government and the inherent loss of a possible back-up system if in the event GEMSD services were compromised (6 and 10). A ‘good example is the court link system where all the magistrates were put online many years ago, and the message now seems to be that if that system goes down that there would not be a clerk of courts around that would know how to use the forms or be able to find the forms to go back to a manual system (10).’ Another local participant explained ‘one size does not fit all. You need to have all the various delivery mechanisms and web (GEMSD) is just another (6).’

5.6.2 Question 12a and 12b.

[Q12a Have there been any disputes or areas of demarcation within government agencies, in relation to parallel systems?](#)

[Q12b. Can you cite the degree of difficulty associated with resolving any disputes or demarcations when implementing any GEMSD projects?](#)

At the time of this study the office of the Chief Information Officer (CIO) was just being formed at the local level. A number of responses in relation to questions 12a and 12b discounted their role or existence and only relate participant comments to prior experiences.

Question 12a: Summary

Some participants indicated a simple no. One stated there were no issues on how the system operates however there are issues around the process of change. A number of participants indicated issues specifically related to data ownership and responsibly. It was indicated that restructuring resources created political issue resulting in issues of

duplication due to lack of sharing, concerns on how the data will be used or perceived and resentment over lost resources. One participant felt that privacy issues were used as an excuse for holding on to data. Thus the view was that all issues were the result of people rather than the technology. Suggestions to deal with the issues included: having a template, change management, improved cross jurisdictional promotion laterally between departments and rules of engagement in dealing with each other.

There have been some demarcation disputes; these do not relate to how the new system operates rather to the 'process of change (2)' and 'political (3)' issues over the restructuring, related to 'getting everyone on board (5)', 'who owns what (13)', 'who is responsible for what (13)', 'cross promotion sideways (4)', 'resentment over losing resources (3)', 'people not being happy with change (12)', 'how the information is to be used (11)' 'how it is perceived (11).'

It was suggested there is a need for rules of engagement to address the 'information ownership culture (12)' reminding all involved that the information is actually governments not individual/ department or agency.

All the overseas participants indicated there were no demarcation issues in their respective areas. One went on to say the '9/11 investigation revealed many problems associated with improper division of, and share of information (OS3),' indicating the inability to share information between agencies and departments can be catastrophic and it has been a devastating example to learn from for future developments in GEMSD projects within America and other countries.

Question 12b: Summary

This question evoked two streams of response: those who had no comment or did not want to get involved in a political type question (1, 2, 4, 10, 11 and 12); and those who had experiences they wished to share (3, 5, 6, 7, 8, 9, 13 and 14). In the later group the general opinion was they had experienced large and/or challenging issues. The disputes issues seem to focus around reluctance to change and 'getting people on board'. Four participants cited reluctance to change in their responses (3, 5, 7 and 9), participant seven expressed it most succinctly, 'People are reluctant to change they are happy with the tools they have got, they know and understand them, they spend time in training their staff, they do not want to necessarily move, even though they know

some of their products have got a use-by-date that is on the horizon (7).’ In relation to getting people on board a common theme was ‘usually it is just agree to disagree and go their own separate ways (5).’ Participant three cited the enormity of one project in which they were involved, explaining their department had to enlist the support of all eighty local government councils in a process of ‘giving-up’ their autonomy in exchange for free services in the future. They continued, ‘(it) has been a five year program and that has probably cost us \$4,000,000 in terms of data claiming and stakeholder management (3).’ Another participant experience was ‘the Enterprise Content Management project,... there is 38 different web document and record management systems across the 14 agencies that are in scope, just trying to get them all on board for one single system in terms of not having parallel and duplicate systems has been a nightmare (6).’

Four participants indicated disputes resulted in projects being held up and taking some time to get functioning (3, 5, 6, and 13). Again it was acknowledged to be due to territorial issues.

One participant indicated there was value in having someone strong to push a project through in the form of a champion input from senior government officials or senior politician (5). Another participant spoke of issues related to the interface of the practical application of a policy and the policy itself (8).

The overseas participants expressed that they had little experience of resolving this type of dispute.

5.6.3 Question 13a and 13b.

[Q13a. What steps were taken to ensure process participation across government agencies?](#)

[Q13b. What do you consider major steps for effective process participation?](#)

Question 13a: Summary

‘Very few people in the early stages could understand the whole picture they were focused on just their little backyard (5).’ All local participants were agreed that during the early stages of GEMSD it was necessary for good communication and ‘forums and mechanisms of getting people together (8)’ from across government to bring ‘vision to reality (10)’. These working groups were normally at the senior management and higher tactical management levels brought together for ‘input on user requirements, system design, developing pilot strategies and implementations

(1)' this had the effect of making 'no one agency (is) responsible for the planning process (1),' thereby side stepping the political aspirations of individual departments and agencies. The 'highly collaborative approach (7)' had another benefit of getting 'a bunch of visionaries and people who are not attuned or necessarily connected to the vision (2)' together 'getting them active, (and) involved (11).'

Participants explained that later in the process the introduction of the Office of the Chief information Officer introduced the concept of 'standards and guidelines (8), and 'common products and tools (7)' to be used across government as 'a process of change (which) requires a fairly clear methodology or practice of evaluation and articulation of benefits (2).'

In parallel to the communication and enticement of departments and agencies, local participants explained the need for a 'political imperative (1)' as a background driver for participation across government (1, 2, 3, 4, 5, 10, 11, 12, 13 and 14). One participant explained 'when you have got money, political support, management support you would have to be a fool to fail (11).'

The political imperative was stressed by nine participants through examples of political 'enticement and bludgeoning (2)' by government (1, 2, 3, 4, 5, 10, 11, 12, and 14). Four of these, referred specifically to the 'traffic light system' which was deemed 'a significant motivator (4)' in process participation (4, 10, 11, and 12). This process involved the secretaries of departments and agencies in a quarterly performance plan 'where 750 projects across government (so) on a project basis they had to say how far they had gone against the targets. That then translated upward and upwards and it rolled up to a one-page traffic like report that went to cabinet (10).'

The 'traffic report' had significant bearing on budget, priority and 'attention' paid depending on the number of 'green or yellow traffic lights.... all the Ministers of course were keen to make sure that they did not have a new red traffic light (4).'

Of the overseas participants only two had opinions in this area (OS2, OS3). The most emphatic was OS3 explaining in America the 'homeland security agency is in charge of ensuring that all... share and gave access to the same high quality information.'

The other opinion explained there was one agency responsible for participation 'IDA has the responsibility to ensure that government agencies utilise some framework so they drive this process to all the different government agencies (OS2).'

Question 13b: Summary

The majority of local participants considered political imperative to be the major factor in ensuring effective participation (1, 2, 3, 4, 5, 10, 11, 12, 13 and 14). This imperative was seen to carry with it the ability to motivate across government through ‘Ministerial buying and mandate (2),’ which would then flow to all levels of government. The use of deadlines and monitoring systems such as the ‘traffic light system’ were seen as useful tools in delivering the political imperative (4, 10, 11, and 12).

All local participants believed communication and collaboration via working groups and getting across government involvement actively assisted in the initial start phase projects. Later in the process three suggested the use of the centralized organization for co-ordination and coherency, in the local case it is the Office of the Chief Information Officer within the department of Premier and Cabinet (3, 6, and 11). Again, of the overseas participants only two provided opinions in this area (OS2, OS3). Both of these centred on the use of one specific agency handling all issues of participation process across government and agencies.

5.6.4 Question 14.

[How does Victoria manage ‘single portal’ customer relations/support previously serviced directly by different agencies?](#)

All local participants acknowledged the existence of a single portal through the Vicone interface which provides a central ‘feedback point’ from customers. Eight (2, 3, 5, 7, 8, 9, 11 and 12) continued to say it was a poor attempt and support is difficult. ‘This is the big challenge for us, we have created a rather average Victorian government portal for online service delivery (8).’ Further, a number of participants simply indicated they did not deal with this and put it in the too hard category, ‘we have not been able to hit that route yet (5).’ ‘It’s just a stitching mechanism isn’t it? It still relies on agencies (9).’ ‘There is still no mechanism in which to aggregate service delivery from single departments into a central area (8).’ ‘There are 22 call centres for that (6).’

Also it highlighted an undercurrent of ‘empire building,’ ‘turf-war’ and lack of collaboration in attitude with five participants (5, 8, 9, 11, and 12) denouncing the single portal policy, ‘if you think about it is so diverse that it would be suicide not just politically but probably in terms of the quality of service (8).’ ‘Our department does not play ball with a lot of central stuff (11).’ ‘Regular users who do not want to go through all the crap (12).’ One participant stated it created a ‘push back’ from ‘Information Victoria’ the former central access point prior to Vicone, saying they do ‘not want to become a backstop (4).’

So poor is the current support for single portal the same participant explained ‘so we have developed our own defacto network within here, people we contact in government to get answers on various issues (4).’

Of the overseas participants two saw value in single portal (OS1, OS2) and were actively involved in their delivery, the third was not involved. The issue of co-operation was address by one who explained in their country ‘The (single) portal requires agreements on procedures and these are typically reach by signing a MoU (Memorandum of Understanding) type of document. The portals have editorial boards and steering committees who`s tasks is the keep the co-operation alive (OS1).’

5.6.5 Question 15.

[GEMSD offers the concept of ‘click and collaborate’ or instant government accessibility. Does this really exist or are we still in the ‘take a number’ phase.](#)

All participants answered this question. Overall participants felt there was a developing culture of ‘click and collaborate’ amongst government customers with ten agreeing (1, 2, 3, 4, 5, 7, 9, 10, 13, and 14) and four disagreeing (6, 8, 11, and 12).

However in those who agreed there were a number of qualifying comments and views relating to the progress, use and GEMSD information methods adopted.

Of those who disagreed the strongest came from a review cited by (7):

‘The Website Review Project which was run by Strategic Communications identifies that no, it is still a case of take a number, in fact you are better off writing a letter in because the process of the system is support responding to letter are greater than our email, there is inconsistency in the approach for putting in electronic communications.’

Other participants who disagreed suggested that speed issues in responding to customer’s requests and needs were inadequate. An example related to supreme-court

judgements not being available to media until much later, rather than having information automatically entered into GEMSD systems for ready access (11). Another suggested they are still in the 'take a number phase' as 'it is quite complex to map relationship(s) in information so that you can come in on a particular theme' thereby satisfying the customers needs (12).

Amongst those participants who agreed, there were five who commented on the evolution of projects (2, 3, 4, 6 and 8) contending the level of sophistication had a direct relationship to the acceptance of 'click and collaborate' suggesting once the enquiry or service went beyond the existing or immaturely defined GEMSD services, it then became a laborious and time intensive task, 'if somebody ... in an agency has to do something to help fulfil your request online (mobile), then there is no uniform policy (and) there are response time issues (6).' Also once these predefined limits were exceeded any form of tracking system for service requests proved only to slow the process down further, 'Yes it has made us more accessible but it has also created a headache from a record keeping point of view (6).'

Others (2, 5, and 8) observed the use of 'template' systems similar to transactional process system guidelines proved to be more successful, but their use was 'sporadic' and this was seen to be the exception 'It's as though nobody learns from somebody else's good fortune or good example (5).'

Of the five (1, 2, 3, 13, and 14) participants who strongly agreed with the acceptance of a 'click and collaborate' culture, the strongest cited an example where in their department they had done away with a 'shop-front' service 'we do not actually have a shop front (3),' in favour of 'a whole range of digital lodgement capabilities (3).'

While others suggested with GEMSD 'you plug and play immediately (1),' or you 'get a better outcome both in terms of service outcomes and cost savings (2).'

Of the overseas participants all three (OS1, OS2, and OS3) agreed the 'click and collaborate' culture exists in their respective areas. With two supporting the comments of local participants saying 'If the service requires human intervention it is basically a take a number method (OS1),' or 'I don't think an email would help serve your need (OS2),' in relation to the speed of response.

5.6.6 Summary acceptance and embracing GEMSD

Both documentation and interviews suggested there was greater transparency in government because of GEMSD and the electronic media catered for greater control

over data and it is more secure. Few found it necessary to maintain duplicate audit systems for both GEMSD and traditional delivery systems however there was a substantial belief that the total loss of traditional audit systems would remove any 'back-up systems' in the case of electronic media failure. By far the most controversial theme was in relation to demarcation and disputes in implementing GEMSD. Question 12b evoked considerable discussion at interview with participants either refusing to be drawn into the question or being very candid in their experiences; fortunately the latter group was the larger by thirty percent. This one question drew significant insight into a major inhibitor to GEMSD success and is invaluable to the researcher. Subsequent questions (13a and 13b) revealed the evolutionary way the Victorian experience unfolded with little standardisation across government and helped to build-in the 'turf war' or idiosyncratic nature of Victorian GEMSD.

In relation to single access portals most agreed it was necessary but perhaps not yet efficient as may be possible. Whether GEMSD offers click and collaborate or 'take a number' system appears to depend on the project. The indication from participants is that if it is just a self serve process then it is easier to facilitate a 'click and collaborate' than if it is a complex process or requires agency input.

5.7 Security

This section addresses the five questions asked of the participants that relate to the security aspects the GEMSD model:

5.7.1 Question 16.

[There are known limitations with traditional methods in avoiding malicious damage to data. Are there benefits with GEMSD in achieving communications stability and data integrity?](#)

This question was divided in response with a number of realities on the situation. One stream were concerned with external threats to communications and data integrity such as hacking or destruction of storage facilities, while others were aware of internal threats such as mis-keying or poor indexing systems across government causing data confusion in relation to accuracy of identity or consistency across GEMSD.

The majority of participants (5) agreed both communications stability and data integrity are a real problem and it would be naïve to ignore them. Two continued to

comment that the level of effort in Victoria is not as high as they would have anticipated ‘What I find surprising is how little there is being done on security in Victoria (5),’ and ‘(Victoria) does not have good identity management (6).’ Another three pointed out the cost of ensuring security can be high, and that any risk assessment would highlight the need to justify costs involved (2, 11 and 12). Also would the likelihood of security breaches and seriousness of implications warrant costly solutions or measures required to resolve what might be a reasonable risk to the organisation (11). In contrast, the nature of GEMSD access requirements can compromise security standards as some solutions for service access come at the cost of reduced security levels (2 and 12).

As part of GEMSD projects, post implement review and a need for multiple sites to be re-developed after implementation or ‘tweaked’ once in service (2) thereby causing another source of security degradation was identified.

At the time of the interview (OS2) recognised there had been ‘over 600,000 hacking attempts’ per day, however the sites had not been ‘breached’ due to their three tier security systems. Both (OS1 and OS3) acknowledged risks but said no major threats or situations had occurred primarily because of strict guidelines on the matter. Of all participants, only two acknowledged governments have a legal responsibility to ensure communications and data integrity in GEMSD (OS2 and 11).

5.7.2 Question 17.

[Identity theft is the basis of financial fraud. What steps are necessary to minimize identity theft and ensure successful GEMSD customer participation?](#)

All participants acknowledged identity theft as a major security issue. However this question highlighted a common problem with local interviewees suggesting the Victorian government has a need to improve identity management particularly in Public Key Infrastructures (PKI) (2, 3, 6, 9, and 12).

Two local participants identified that their individual departments or agencies were actively pursuing major work in identity management and security (8 and 11). A further two recognised a need for ‘digital certificates’ or ‘authentication and authorisation’ prior to data access (1 and 5). Of those local participants who answered this question only two, (6 and 7) acknowledged their legal obligation to secure public information, referring to the Information Privacy Act or the Commissioner for

Privacy. Participant (6) continued to recognise identity management as an auditable area to ensure privacy of data checks and balances in the GEMSD process.

The overseas participants suggested identity theft was not a major problem and they had not encountered any problems ‘Cases of identity theft have not been reported in media and we have not heard of any unpublished cases either (OS1).’ All overseas participants (OS1, OS2 and OS3) referred to their systems of unique personal identifiers managed by governments either via social security numbers or individual identification records. These provide a consistent across-government index which is hard to compromise and insured internal data integrity unlike situations cited by local participants with individual databases and a variety of indexing systems peculiar to autonomous departments or agencies. An example cited by (OS2) related to accessing mobile telephone services in GEMSD and their service being linked to their unique identifier thereby enabling accurate verification before responses are transmitted back to the inquiry.

5.7.3 Question 18.

[How effective do you consider routine transaction audit and transparency in securing GEMSD services at present?](#)

Ten of the participants deemed regular transaction transparency and audit desirable in GEMSD projects and services (1, 2, 3, 4, 8, 9, 11, 12, 13, and 14). However only five felt it was a necessary ‘check and balance’ for better security in GEMSD (3, 4, 8, 11, and 12). Indeed, only four local participants were aware that it would be an essential requirement under Victorian legislation by 2008 (3, 8, 11, and 12). Three others acknowledged a commitment by verifying they had, or were about to enter into trials of transaction transparency and routine audit (1, 2, and 4). Two participants (11, 12) explained they had a ‘fairly basic ... credit card component reconciliation... run by a third party (12).’

Of the overseas participants, all three agreed regular audit and transaction transparency was an ‘excellent’ method of ensuring security in GEMSD projects. One participant explained their government had set up a separate organisation for the express purpose of transaction GEMSD transaction auditing for reporting and security excellence (OS2).

5.7.4 Question 19.

Have legacy systems impeded security and are there any future proof enhancements that can facilitate successful GEMSD projects?

This was a particularly sensitive area with seven of the local participants avoiding answering the question (1, 2, 4, 6, 7, 10, and 13) with responses such as ‘I’m not equipped to answer that one (2)’ or ‘I cannot comment on that (4)’ and ‘best we don’t have a view on that (6)’. Further probing during interviews proved unproductive with participants withdrawing from comment. Of the remaining participants six suggested legacy systems were not impeding security (3, 5, 9, 11, 12 and OS3), four continued to add that legacy systems were more secure than more recent technologies ‘Legacy systems have actually improved security because nobody can get to them (3),’ ‘I think it is an effective way to ensure security of transactions (OS3).’ (3, 9, 12 and OS3).

Only five (5, 8, 11, 12 and 14) believed certain aspects of legacy systems held GEMSD back. The legacy system aspects considered most hindering GEMSD were the need to generate ‘the right application hooks (5)’ to retrieve relevant data. ‘It’s unfortunate they were built with the technology of their time... they just don’t have the ability (11)’ as they will have to do ‘until something better is available (12).’ The most emphatic of the participants stated ‘everything we do in terms of improving (GEMSD) is impeded by legacy systems.’

Two of the overseas participants suggested legacy systems ‘mildly (OS1)’ limit GEMSD projects. Comment from OS2 explained ‘if the legacy system is just an engine to process the data, the mode of entering information into the disk (legacy system) could be separated from the legacy system (OS2).’

5.7.5 Question 20.

Traditionally individual departments or agencies have been responsible for data storage and security. What benefits can be delivered from central data warehousing for whole-of-government GEMSD?

Of the sixteen participants who answered this question, nine agreed with central warehousing (2, 7, 8, 9, 10, 11, 12, OS1, and OS3). However there were some ‘conceptual issue(s) about central warehousing (12).’ The most common issues were the application of a consistent indexing system and cultural acceptance between departments and agencies. It was identified by three participants (2, 8, and 11), that a suitable index would have to come from an essential services database such as police,

health or perhaps an external source such as taxation to provide a consistent index not subject to misspellings or keying inaccuracies (11, 12). The issue of cultural acceptance indicated unwillingness to ‘give-up data (12),’ ‘I am sitting outside the circle looking at the potential of the data I want to access (which) is not always available because of cultural issues (12).’ The same participant was concerned about a physical central warehouse in light of the American September eleven type security risk of having a central repository for data.

Virtual Central Warehousing (VCW) was a theme repeated by four (7, 8, 11, and 12) participants. This theme is based on a belief that a number of legacy systems, scattered throughout departments and agencies, are incapable of being modified to cope with necessary changes to facilitate complete central warehousing of data. Further it concedes that upgrades to new systems are cost prohibitive and that the legacy systems will be around for some years to come. In acknowledging that central warehousing is desirable, the viable alternative is VCW. This was seen as an ‘an enterprise scalable system... able to service more users... better performance (7).’ The most appropriate form of VCW is seen as using data images from legacy systems brought together in a central image warehouse updated modified and then the updated images rewritten to the distributed legacy systems back in individual departments and agencies. With that data that cannot be stored in legacy systems being maintained in the VCW.

The perceived benefits of central warehousing were predominantly the ‘efficiencies (and) significant savings from central data (1),’ the ‘enterprise scalable system (7), more efficient buying power (7), the ability to introduce enhanced systems and modifications in one place (7), the duplicity of records ‘able to keep one record for multi purpose (8).’

5.7.6 Summary of security.

The major concerns in the security AOS were a combination of external malicious threats, internal data integrity and identity theft. There was a general concern about transitioning legacy systems to cope with electronic and mobile requirements. Two more interesting facts to emerge were a general lack of knowledge in relation to the legislated requirements for information protection and secondly the overseas scenarios

did not have the same degree of difficulty with identity theft as they were able to employ personal identify facilities such as the American social security card or a unique identifier for every individual, a practice which is not available in Australia. Document analysis of the eGovernment resource centre and records from individual agencies supported the concerns regarding internal data integrity and identity theft, however there was an absence of material on transitioning from legacy systems to GEMSD.

5.8 The cost and implications

This section addresses the five questions asked of the participants that relate to the cost associated with GEMSD:

5.8.1 Question 21a and 21b.

Q21a. There is a strong trend to remove government from the business of ICT. To what extent has government transferred any costs of GEMSD to the private sector or other funding bodies?

Q21b. What GEMSD projects should be government funded or kept government only?

Question 21a: Summary

In general local participants believe government is actively trying to transfer costs and risk to the private sector. Ten participants (1, 2, 3, 5, 6, 8, 9, 11, 12, and 13) were able to provide examples of cost and/or risk transfer from government to private parties through simple mechanisms such as ‘individuals, and companies, keying data and printing (8)’ or more formal Public Private Partnership (PPP) agreements. However, two participants (4 and 7) saw PPP as mostly not working, ‘Victorian government does not have a good track record of PPP (7).’ suggesting what services have gone out to the private arena are coming back into government.

Of those participants who believed government is transferring cost and risk out of government 3 main sub-themes developed. The first was outsourcing, seven local participants (1, 4, 5, 6, 8, 9, and 13) identified various forms of outsourcing and taking non-core business out of government. ‘Vicroads for example it doesn’t in-source anything, it out-sources all of its ICT (6),’ and in land settlement the ‘financial settlement manager transferred the costs and risks to the banks in the private sector (1).’

The second was government becoming a wholesaler of information to the private sector. This sub theme was supported by three participants (1, 3 and 12). One explained ‘we went first to the market with an expression of interest to value adders... (and) now getting quite strong and extremely large investment coming through from the private sector... so we wholesale that report for \$1.00 and they have on sold it to someone else (3),’ The same participant identified a hidden benefit by selling the same information to multiple ‘value adders,’ ‘we have got 10 purposes for it as opposed to what was before one (3).’ They did qualify it was advisable that ‘we will not do exclusive deals (3)’ with private partners to achieve the wholesaler result.

The final sub-theme was to spread the cost and outsourcing across government, this was seen as a variation on outsourcing by using other government departments and agencies with specific skills or infrastructure to contract work for government entities. An example cited was a department becoming the educational publisher for all of government and perhaps other levels of government across the country, competing with private suppliers for work, ‘I have always contemplated a digital publishing, education publishing market in Victorian government (2).’ Another general qualifier for outsourcing specified by one participant was, outsourcing infrastructure ‘ought never be located outside the physical jurisdiction of the (10)’ government.

Of the overseas participants one suggest that ‘about 90-95% of all ICT related activities are outsourced to the private sector (OS3),’ however they did acknowledge that in remote or ‘local authorities in small cities continue maintaining small technology departments (OS3)’ to provide ICT infrastructure and services. Another raised a theme previously not identified by local participants suggesting ‘the moment you go into a public/private partnership there is always the issue of intellectual property, who owns it? Who has ownership of the data? Who has ownership of the system (OS2)?’

Question 21b: Summary

Three major themes arose from this question; the need for a central or government role in service provision; impediments to successful outsourcing; and factors supporting successful outsourcing.

In relation to the central or government role in service provision seven (2, 3, 4, 6, 7, 8 and 9) local participants supported and had comment on this role. The sub-themes identified that government should control strategic direction of the GEMSD services (4) and should retain the policy role (3 and 7). Similarly government must have close contract management and supervision of those services that are outsourced to private sector bodies (2, 3, 4 and 9). Issues such as security and privacy must remain in government (7) as well as all licensing and regulatory requirements (8). One participant felt it was essential for government to maintain all directories especially those that contain electronic postal and personal addresses (9).

There were three perceived impediments to successful outsourcing: a lack of appropriate regulation and governance (1); political perceptions that private providers often make it difficult for government to relinquish its responsibility for fear of liability (11); and there is a perception of bias and partiality by private service providers (8).

There were likewise three factors supporting outsourcing of GEMSD services: already there is a large amount of services outsourced and working effectively (3); anything other than policy, strategic direction and contract management is capable of being outsourced (3); and there are in-place appropriate regulations and governance to accommodate outsourcing (1).

Overseas participants offered two opinions: In any outsourcing or devolution of responsibility there are inherent 'normal business risk (OS1)' which must be addressed. Also the issue of ownership extends beyond systems and procedures to incorporate data generated, listings and ownership of liabilities present and past (OS2).

5.8.2 Question 22.

[The initial investment in GESD has been quite high. Are we seeing any cost recovery in the Victorian experience?](#)

All participants answered this question drawing good comment from local participants with a rich diversity of response. There were only seven (1, 3, 5, 6, 11, 12 and 14) with a definite 'yes' theme to this question, four (2, 4, 7 and 13) definite 'no' and two (8 and 9) undecided.

Of the 'yes' theme, six (1, 3, 5, 6, 11, and 14) were able to offer evidence of cost recovery. However of the 'no' theme, little evidence was offered generally surmising 'I don't think enough work has been done (4),' or 'it is not being measured (7).'

Participant seven did justify their response 'one of the reasons the performance is not measured is cost control. GEMSD is seen as intangible assets so their accounting practices are terrible (7).'

In the 'yes' theme group there was a division on the definition of cost recovery in GEMSD. Emergent sub-themes became apparent and were classified into three areas: cost recovery in successful projects; some projects are non-profit orientated; and wider benefit recovery or 'triple bottom line'.

In the cost recovery in successful projects sub-theme, the most obvious evidence cited was the VOTS land exchange project which recovered all GEMSD costs of \$92 million in three years and redirected profits into the 'SPEAR service which does not have any fees attached to it, so in essence, is almost a community service (1).'

The non-profit orientated projects such as emergency services generated two arguments suggesting we 'don't expect cost recovery, the private sector would step in and deliver the service if it were profitable to do so (5),' or 'government provide the service because it is cheaper for government to do so and because the community expects it of government (5).'

The 'triple bottom line' group were concerned with 'achieving stated government policy (2),' delivering 'non-financial benefits (8),' and ensuring 'better informed decision making (12).'

In addition to these sub-themes there were some new propositions formed. The foremost of these was the 'visionary devolution of responsibility (2),' which was seen as a mature GEMSD system of cost and resource sharing across government, joining up projects across government regardless of traditional departmental or agency base in order to reduce cost and deliver a better service to customers and recover costs as well (2).

One participant warned of becoming a 'cash cow' by moving to the next level of GEMSD sophistication suggesting 'we have got more complexities because of identity fraud and risks changing (11)' thereby actually increasing costs overall and being unable to recoup these costs long term.

The overseas participants had three main points to make; ‘GEMSD services... caused other quality benefits. The clear cost savings have so far come from government to business services (OS1);’ ‘improved cost efficiency, though tough to measure, is one of the main reasons of any GEMSD initiative (OS3);’ and ‘I think we have been profitable ever since the first day and that is partly because of the government ownership, they were the driving force (OS2).’

5.8.3 Question 23.

What regulatory checks and balances have had to evolve with GEMSD projects?

Four themes emerged from interviews with local participants. Firstly this role should be exclusively in the hands of the Office of the Chief Information Officer in the department of Premier and Cabinet (1), secondly ‘the main balance and checks is the auditor general who has jurisdiction and quite a lot of say over the way all electronic systems are built and run (9).’ Third, ‘surprisingly few’ checks and balances are applied in GEMSD to ensure success, continuing that most are forced upon them by other jurisdictions such as the national Australian Competition and Consumer Commission (ACCC) in areas of ‘pricing, competitive neutrality, legislation (1).’ Finally ‘only superficial ones... we will be putting in place a website management framework which will go through and have key standards congregated which agencies will be required to meet and they will be required to report on them on a regular basis and that will be phased in over the next twelve months (4),’ suggesting there is little in place but the situation is getting better (4 and 8).

Overall local participants subscribed to the belief that GEMSD would be more successful with regulatory check and balances to ensure operational standards and maintained service levels, with eleven supporting the theme (1, 2, 3, 4, 5, 6, 8, 11, 12 and 14).

Overseas participants were hesitant in responding to this question with only one response, suggesting each jurisdiction is responsible for their own checks and balances to ensure successful GEMSD (OS2).

5.8.4 Question 24.

[Is there scope for a single audit trail in GEMSD?](#)

Local participants agreed a single audit trail for GEMSD would help with success with nine (1, 3, 4, 5, 7, 8, 9, 12, and 14) supporting the issue. Whilst others (2, 11 and 13) felt either the cost of audit trails are too high or ‘to achieve what (12)?’

Suggesting that not every department and agency would be suited to lengthy audit trails particularly in areas such as health ‘The audit trail you would want in health for example I suspect would be longer and deeper than you might want in education. You might want twenty years of medical records and adaptations of images (2),’ implying difficulty with storage and management.

Of those participants who agreed with a single audit trail, five (2, 7, 8, 9, and 12) confirmed ‘if they can get all GEMSD into one big system, then things like audit trails, archiving, version control and maintenance of data can become much more manageable (2).’ Suggesting across government management control and administration is not only achievable, but worthwhile.

Overseas participants were divided on this question with two (OS2 and OS3) agreeing a single audit trail is worthwhile, however OS2 was concerned about the possible financial cost of implementation ‘but there is a cost element involved in it (OS2).’ One overseas participant was opposed to the single audit trail suggesting there is no reason for single audit trail in GEMSD (OS1).

5.8.5 Question 25.

[How do governments perform ongoing benchmarking or audit of GEMSD services?](#)

This question evoked strong opinion from local participants and was seen as an area significantly lacking in format, procedure and recognition. Eleven (1, 2, 4, 5, 6, 8, 9, 11, 12, 13 and 14) identified benchmarking and audit as necessary for GEMSD success ‘yes, yes, yes, I think it’s very important (1)’. Of these, (1, 2, 4, 8, 11, 13 and 14) believed it was not being performed well ‘we do not audit well at all and we do not keep historical data (5),’ or it has been done ‘badly up until now (8).’ Another group (4, 6, 8, and 11) believed there is a founding movement occurring within government ‘that is beginning but not actually happening at the moment (11).’ Four acknowledged overseas benchmarking and audit techniques (1, 2, 4, and 14) as being

better than those occurring locally. One participant suggested ‘I don’t think anyone in Australia can teach us much about it (2),’ implying it is not performed well in Australia, while others (7 and 9) simply passed responsibility to the Auditor General ‘Victoria has ongoing audit of its services both by internal audit and the auditor general there is no ongoing benchmarking; it is done on an ad-hoc basis (9).’

When more specific questioning pursued GEMSD benchmarking it became obvious there was little being done locally, however the majority believe it is essential for successful GEMSD (1, 2, 4, 5, 6, 8, 11, 13 and 14) ‘there has been no real benchmarking so I don’t think we have performed well (8)’ in this area. One participant offered ‘they have had bugger all take up because they have not provided enough proactive assistance in rolling out (1)’ good benchmarking practices.

Six participants (1, 2, 4, 5 and 12) believe international benchmarking is useful in successful GEMSD though one believed ‘less than 1% of people that are interested in the stuff look outside (5).’ At the same time three (1, 4, and 12) qualified their belief by cautioning ‘it can be difficult to compare across service areas (1),’ ‘we are quite different from our competitors (12).’

Overseas participants were similar in opinion asserting information was kept by agencies and departments but the ‘usage is not measured systematically (OS1).’ Again caution was suggested in cross jurisdictional comparison re-iterating ‘we are different from others (OS2).’

5.8.6 Summary of the cost and implications.

In summarising the cost factors reflected in questions 21-25, not all respondents agreed, but generally they agreed governments are trying to transfer the cost of GEMSD to other parties whether it be PPPs, other government or users paying directly for services. In relation to ROI, documentation was scarce but interview data affirmed some cost recovery was occurring in Victoria, however overseas data was strong in cost recovery. Checks and balances, single audit trail and benchmarking all seemed to be departmentally or agency based with few whole-of-government standards in place the notable exception being the Auditor General’s requirements.

5.9 Access and the real use

This section addresses the five questions asked of the participants that relate to the access to GEMSD services:

5.9.1 Question 26.

In banking we have seen the use of ATMs change the way customers do banking. Is there evidence of a similar shift in customer behavior for GEMSD projects?

The consensus amongst the sixteen participants who answered this question was yes, with only one negative response believing that the process was ‘not yet happening in (Victorian) government (9).’ Responses varied in complexity and attitude with two acknowledging that government is ‘lagging behind business (2, 7)’ in relation to electronic and mobile service delivery. Most of the participants who believed there was a shift in customer behaviour were able to supply examples of usage of GEMSD for their individual departments or agencies. These varied from simple information retrieval (6, 10) to fully interactive service retrieval, manipulation, ordering and payment of services (3, 8). There was a strong suggestion that industry were more ready to use GEMSD services than ‘mums and dads (1).’ Participants (4, 5, 8 and 12) were able to provide statistical data on usage of GEMSD services in their respective departments or agencies which indicated a progressive increase in GEMSD usage. Further data from participants (4 and 8) highlighted the use of these services outside normal 9.00am-5.00pm Monday to Friday government hours and over weekend periods when traditional service delivery mechanisms are not available.

5.9.2 Question 27.

Known impediments to GEMSD exist where potential customers are disadvantaged through problems such as: geographic location; cost; absence of technology; inability, lack of knowledge, or unwillingness to move to new technology. Does community group or stakeholder involvement help facilitate better access to GEMSD?

All participants responded to this question. Fifteen participants agreed with stakeholder and community group involvement and two did not agree. The two participants who disagreed were similar in response indicating in their circumstances it was necessary for government led initiatives rather than consultancy or involvement approach (9, OS2).

Those favouring community group and stakeholder involvements were able to elaborate more on the reasons for involving community and stakeholders. Most acknowledged that stakeholder and community involvement is a success factor ‘in terms of raising awareness (1).’

Five participants (1, 2, 4, 5, and 8) found in GEMSD ‘geographic location really doesn’t matter (2).’ Wireless and mobile examples were highlighted particularly in relation to the South West Health Network (SWHN) and Royal District Nursing Service (RDNS), as being an ‘excellent tool for rapid role-out (12, 13).’ The SWHN example illustrated community-based willingness and initiative in bringing health services to remote communities. Initially part of the Victorian Department of Health Services, SWHN is a 112 member non-profit organization operating wireless technologies in telephony (WiVoIP) and mobile tablets throughout 33 hospitals and 70 ancillary health sites in a geographical area comparable in size to Ireland. Driving factors included a relatively small population, spread over a very large area, with vastly differing geographic requirements (e.g. ranging from coastal mountains, to flat, desert regions), and considerable divergence in the existing infrastructure in the various regional towns. As an extensive regional exercise, it offered non-city centric interests and insights peculiar to larger geographical developments. Prerequisite to becoming a member of the network was a community or organisational acceptance of the technology and the costs involved.

In relation to the absence of technology, three participants considered general technology such as computers, mobile devices and technology evolution issues to be a minor problem (2, 12, 13). The RDNS example, of a non-profit organization with 80% funding from the Victorian Government. Explained how in 1997/1998, the RDNS conducted a 12-month trial of 80 mobile computers. After a successful trial and identification of six areas of potential significant impact on the project success, a rollout of 800 mobile units commenced in 1999. The rollout was completed in late 2003 and represented a landmark wireless innovation for the Victorian Government with technology previously considered unstable. Two participants suggested technology can be and has been adapted to compensate for access areas such as low bandwidth, visually impaired or non-conventional access (10, 11).

Six participants suggested VicNet was a good example of the Victorian government providing access for large numbers of otherwise non-users (2, 4, 5, 7, 8, and 11), offering GEMSD services through public libraries and offering community groups a cheap and effective web-hosting service.

An area of concern for five participants was bandwidth (1, 2, 3, 5, and 10). Opinions regarding bandwidth ranged from government applications being too big to run on low bandwidth to serious lack of infrastructure for many users of the systems. Yet in

contrast a common theme indicated was government should not get involved in infrastructure but rely on private providers for all telecommunication services.

5.9.4 Question 28.

[Is there any evidence that GEMSD provides for the needs of transient and ex-patriot customers?](#)

All participants responded to this question. Of those seventeen participants, fourteen believed there was evidence that GEMSD provided for transient and ex-patriot users. The three who believed there was no evidence had different reasons for their answers ranging from ‘probably more a federal (government) issue (10),’ to a personal experience ‘No, because I am still trying to transfer my pension from the UK here and I have been here for 14 years and all I ever get is addresses that I can write to. I would assume it’s the same experience for Australians trying to work the other way (7)’.

In the main most suggested that the nature of GEMSD was conducive to transient and ex-patriot usage ‘I get quite a lot of traffic from overseas (3)’ and ‘it’s easier for expats as it can be used 24/7 unlike our traditional telephone and over-the counter services which have finite time access periods (8).’ One response went further and questioned the need for large staffing numbers at Australian embassies suggesting with GEMSD many document and information enquiries can be done electronically ‘It does not matter where you are, you can do it anywhere(4)’. Others suggestions included pod-casts to mobile telephones with basic information or brochure-ware and website information templates help to distribute effective government service information, further they concluded these services were only limited by the bandwidth of internet connections or mobile telephone service coverage(5).

A major issue in servicing transient and ex-patriot customers was the successful use of credit card payment for GEMSD services. With participants departments or agencies at various stages of GEMSD implementation, opinion ranged from ‘limited by financial payments (13)’ to ‘card payment enables expat services to be handled easily (12).’ One participant suggests they were more successful in servicing these need because they copied their GEMSD ideas from commercial mobile and web sites (11).

5.9.5 Summary of access and the real use

Document analyses of departmental and agency records indicated there was a considerable shift in customer usage patterns and access methods including greater mobile and electronic patronage, however data also suggests government always lags behind the private sector in terms of usage up-take. In summarising the interview data, particularly access and real use factors reflected by questions 26-28, not all respondents agreed, however there was a strong nucleus of opinion that supported the documentation analyses yet it failed to identify a significant increase in ex-patriot or transient customer access whereas documentation did.

5.10 Conclusions

This chapter has explored the data collected in the interviews and applied a thematic analysis to the data utilised in the investigation of a success factors model for GEMSD. It has validated the model and further refined the theoretical model into a practical model or use by GEMSD practitioners.

The next chapter (chapter 6) deals with research outcomes, it discusses and highlights resulting information from the data and compares this with the model described in chapter 3. It delivers a revised GEMSD model based on data obtained from Victorian government documentation combined with local and overseas participants in the case study and comparison of GEMSD success factors.

CHAPTER 6

THE GEMSD MODEL - DISCUSSION

6.1 Introduction

The purpose of this chapter is to explain the conclusions drawn in the investigation of a success factors model for GEMSD. It compares the original model proposed in chapter 3 with the data as analysed in chapter 5 and provides the findings in a revised GEMSD success factors model. It examines and provides the outcomes of this study in relation to the original research questions proposed.

In general the interim model of chapter 3 is confirmed by the findings of the data and re-presents results in view of the findings drawn from the in-depth case study of the Victorian government's experience and comparator countries, Singapore, and Finland. Also the revised model incorporates data from independent comments of the World Bank.

6.2 General findings and the GEMSD model

The findings evolved from the research combine the extensive review of literature, the realities of multiple Victorian experts currently involved in the discipline of GEMSD, the exclusive examination of Victorian documentation / records and a comparison with minor case studies from Finland and Singapore. Also, it has benefited from comment by the World Bank.

As stated with the proposition of the model in chapter 3, the complexity of the model requires structure and presentation at a number of levels based on AOS, domains and individual success or inhibitor factors. Whilst these are presented in detail later in the chapter, the general findings were:

1. The case study experiences confirm the predictive usefulness of the model for governments contemplating embarking on systems service delivery or to provide a more sophisticated service delivery.
2. The case study experiences confirm the usefulness of the model for governments in reviewing the efficacy and positive intervention of existing GEMSD projects and initiatives.

3. All major success factors have been incorporated in the model although the relative importance of each factor can change with different levels of service delivery or jurisdictional variation.
4. The data confirms the identification and categorisation of individual factors that affect GEMSD as either promoting or inhibiting GEMSD service provision success.
5. The classification of these individual promoter and inhibitor factors into easily identifiable 'domains' is confirmed as useful in assessing GEMSD progress.
6. The identification of positive and negative relationships between domains within the GEMSD model are confirmed by the data as useful in promoting success of projects and initiatives and helpful to generate a relational awareness between domains.
7. The classification of domains into six logical grouping or Areas of Significance (AOS) has been confirmed as useful in organising individual factors and domains into useable groups for identification and analysis of value patterns within the core of the GEMSD model.

These general findings satisfy the original objectives and aims of this thesis and they confirm the general structure of the model to be sound. More detailed findings are presented by AOS research questions and domain relationships.

6.3 GEMSD model findings by AOS and research questions

As the data has been subject to analysis and comparison to the original GEMSD success factors model, it is now possible to report on a number of findings.

Importantly the case study data, drawn from expert comment and review of government literature, validates the usefulness of the GEMSD Success Factors Model. As the initial model was based on six areas of significance from the literature, and the data has generally confirmed these six areas as still relevant, the findings have been grouped by the areas of significance. However the resulting data has prioritised these areas and these variations are presented accordingly. Each of the AOS has between three and five GEMSD research questions numbering twenty-eight in all as are listed

in section 4.2.2 of this thesis. The corresponding findings are provided in each AOS summary and the relevant questions are indented and *italicised* within the paragraphs. The domains within cost were in accord with those of the original interim model and confirmed by interview data and government documentation with a few exceptions. The revised overview of the GEMSD AOS prioritisation is provided in Figure 24 below:

GEMSD prioritised Areas Of Significance

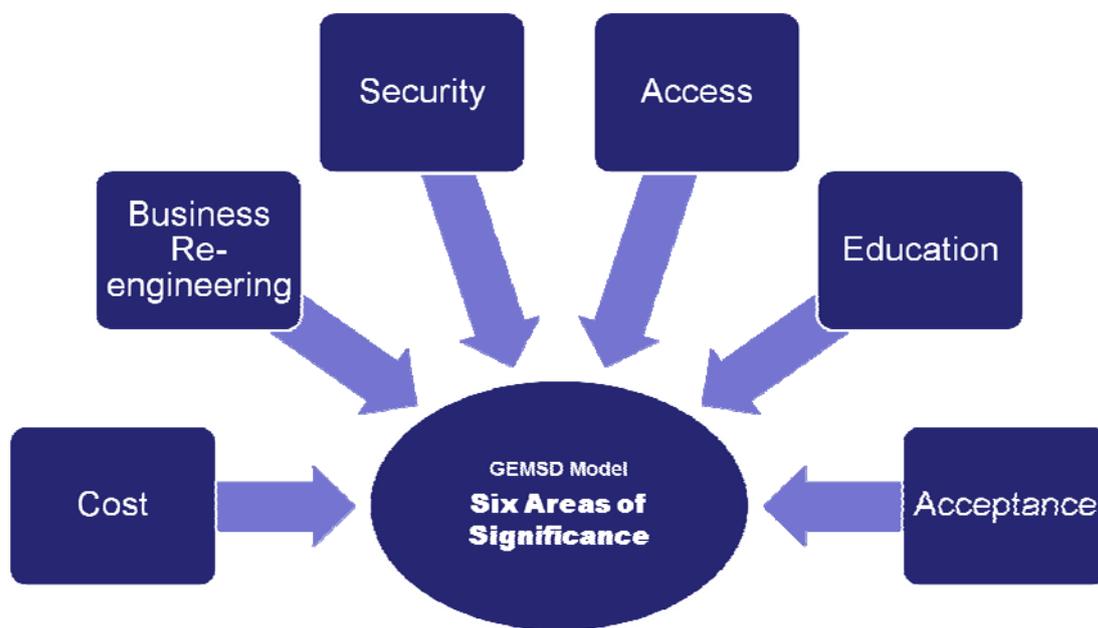


Figure 24 Final GEMSD model of prioritised AOS

Whilst all six AOS were confirmed, the data indicated the most important area of significance was not business reengineering but the cost AOS. All the AOS are presented and detailed by domain and research questions.

6.3.1 AOS Cost questions

The first cost AOS domain related to project funding and PPPs provided considerable response confirming that successful GEMSD projects and initiatives were transferring some of the cost and/or risk from government to private parties. The three resulting emphases were on outsourcing and taking non-core business out of government, government becomes a wholesaler of information to the private sector, and

outsourcing to other government department or agencies who are experts in their field or core business thereby transferring risk. Overseas comparators were in support and confirmed these factors; suggesting only small or remote projects should be retained within government.

However it was acknowledged that certain KPIs such as emergency services should be retained, although this was still a topic of debate with some participants suggesting emergency services such as ambulances and protective services could still be removed from government core business.

In comparison to the original model questions:

‘Does full government funding inhibit the success of GEMSD and will effective public private partnerships positively affect the success of GEMSD initiatives?’

Both interview data and government documentation have confirmed the question but recommend some KPI should be retained by government. These KPIs will depend on the idiosyncrasies of each jurisdiction and their individual mandates.

The second domain within cost AOS was associated with the questions:

‘Is the recovery of GEMSD costs an inhibitor to GEMSD success or does cost recovery promote success of projects?’

Data was extensive in this domain and delivered a richness of response which generally confirmed cost recovery as a success promoter within the GEMSD model. Further the data indicated cost recovery can occur in a number of forms identified as intangible or ‘triple bottom line;’ such social, economic and environmental dimensions of cost recovery can be difficult to measure. This was accentuated by KPI type projects such as emergency services which suggested cost recovery was present but hard to quantify by the nature of the project, arguing that government was the only sector able to provide the service at a cost.

An extension to cost recovery being a success promoter within GEMSD was the ‘visionary devolution of responsibility’ theory which added the sub-success factor of combining government projects and resources to reduce cost and promote success through joint effort within government or governments.

The third question within cost AOS was:

‘Do audit and regulatory checks inhibit or promote GEMSD success and are they susceptible to political intervention?’

Initially this question was confirmed with documentation and interview data supporting audit and regulatory checks as a promoter of GEMSD success. However further investigation suggested little was actually being done in this area generally and, other than the auditor general's office checks and balances, only local or defacto measures were in effect to promote success. References to the Office of the Chief Information Officer (OCIO) were made but at the time of this research, little was emanating from the OCIO.

Continuing on a similar GEMSD theme, the next question tested audit within GEMSD using the questions,

'Does single audit trail promote or inhibit success of GEMSD or will multiple audits suffice?'

Overseas opinion varied on this question, yet Victorian experiences suggested a single audit trail would promote successful GEMSD projects. The main arguments against this proposition centred on the suitability of a single audit trail for some departments and agencies while others were concerned with the cost involved.

Whilst little documentation was available in relation to benchmarking of GEMSD, strong opinion was evoked from Victorian and overseas participants during interviews in relation to this last cost questions.

'Does continuous benchmarking promote GEMSD success and does the lack of benchmarking inhibit success?'

Data strongly confirmed continuous benchmarking as a promoter of success, although many Victorian participants suggested little was being done in Australia and that overseas experiences were superior to local. They continued that with the empowerment of whole-of-government agencies such as the OCIO, it should be possible to promote more effective and efficient benchmarking of services and delivery. Overseas opinion agreed, continuing that benchmarking was not yet systematic and should be evolved further for successful GEMSD offerings.

With the cost AOS domains supported by the data of the original cost AOS model diagram is validated and the final diagram is shown in Figure 25 below:

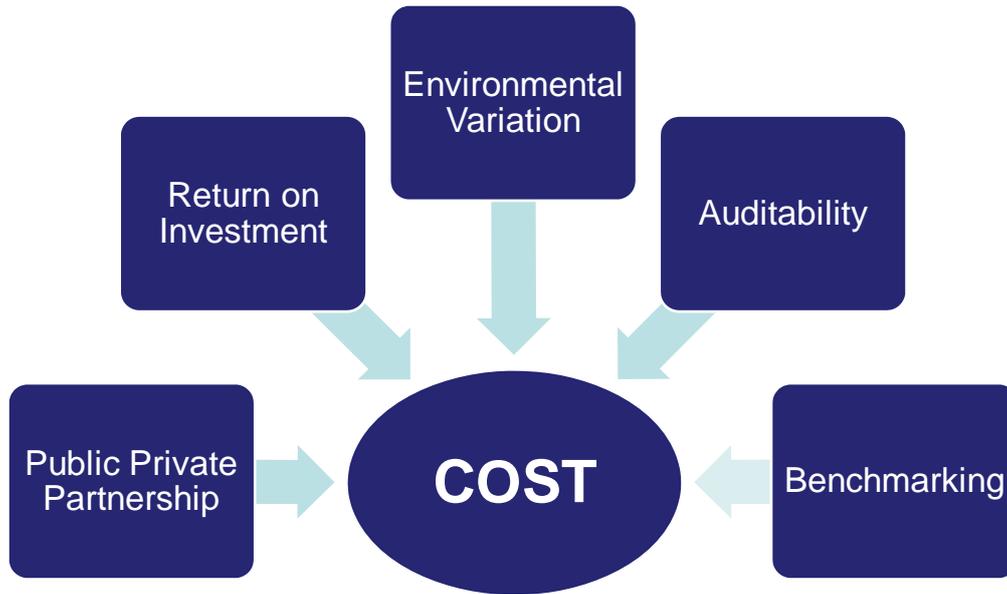


Figure 25 Final GEMSD model Cost AOS

The cost AOS model is unchanged from the original interim model proposed in chapter 3 and has been generally confirmed by the data.

6.3.2 AOS Business re-engineering questions

The five identified domains of business re-engineering AOS were generally confirmed by the data and in general revealed that those departments and agencies which are considering the implementation of GEMSD need to seriously consider what is required to re-engineer government and apply the required resources to achieve satisfactory results first time round. Much of the data considered there provides examples of good, working systems, and suggested there is a strong need to avoid duplication by carefully re-engineering government with a holistic view for service delivery, and to invest adequate resources to promote successful delivery of revised or rationalised services which are to be delivered via GEMSD. The Victorian data suggested the characteristics of good business re-engineering included: the importance of maintaining some flexibility with initiatives and innovations; and those projects should be comprehensive, of good quality and user friendly.

Implementations are still seen to be in their infancy requiring careful planning about what needs to be done across government, and the significant resources required to successfully re-engineer government services and their delivery.

In relation to the individual research questions, the first business re-engineering AOS domain related to centralised authority and political championing of GEMSD. It was confirmed by the data and further suggested that this domain offered ‘reduced problems, challenges and duplication of effort’ to ensure successful GEMSD initiatives. The researcher did note that one interviewee suggested that because systems were not yet ‘up and running’ a centralised approach may not be pragmatic to establish services. When comparing the data with the original model question:

‘Does GEMSD need to have centralised authority and political support to be successful or can it be achieved successfully through decentralised control and limited political support?’

The data generally confirmed centralised authority and political support as promoting successful GEMSD and therefore supports the original model.

The second domain related to a legal and regulatory environment which promoted success for GEMSD. The original model question was:

‘Is it important to have a cohesive legal and regulatory environment or is agency specific legislation adequate?’

The data from this area was rich with information. Generally the original model was supported but three main themes emerged from Victoria and one from overseas data. The Victorian themes suggested many legislative and regulatory systems needed to change to facilitate GEMSD; however data also suggested these were mainly necessary for privacy, security and form design issues. The data failed to identify a holistic approach to this issue being somewhat provincial or agency-based in responses. The one theme that did relate to a whole-of-government or holistic look at the issue simply suggested the scale of the task was a sizable consideration. An interesting theme identified by overseas data was the jurisdictional problems arising from provincial legislation and regulation, concluding that the effort required to achieve cohesive legislative and regulatory environment outweigh the benefits of cross-jurisdictional reform.

Domain three was concerned with the single access portal for GEMSD and its appropriateness for successful GEMSD. The research question posed was:

‘Does single electronic portal access promote success and do individual departmental access portals inhibit success?’

Data from Victoria and overseas supported the original model with strong support from overseas. Discussion centred on the quality of the single portal with the major issues of user friendliness, navigation, and familiarity of interface. The navigation issue was advanced with the notion of cross-jurisdictional access portals defining service types regardless of jurisdiction and promoted a user-centric governance approach based on the constituent's needs across a number of levels of government with which they may interact. This need across levels of government indirectly supported the whole-of government approach promoted by the original model. The negative argument offered was that the sophistication of existing search engines made single portals redundant. However from a service provision perspective most data supported a single government 'front-end' or portal rather than relying on existing search engines. This was particularly evident for mobile interfacing.

The fourth domain of business re-engineering dealt with the whole-of-government issue and redefining services across government for successful GEMSD implementations and initiatives. The research question in this area was:

'Does multi-jurisdictional service promote success and does agency specific service inhibit GEMSD?'

In principle the data generally supported the original model in that a multi-jurisdictional interface promotes successful GEMSD. The only concerns in this area were that multi-jurisdictional services are in their infancy, particularly in relation to mobile services delivery. The overseas data strongly supported this domain suggesting that multi jurisdictional policy transfer capability provided the 'same look and feel for service (delivery which) makes use easier' for users. Also the hierarchical nature of governments can give way to more 'intuitive way(s)' to access government services through successful multi-jurisdictional service provision.

The final domain in the business re-engineering AOS dealt with the convergence of technologies through information and communication technologies (ICT). The research question to be answered in the original model was:

'Does the introduction of ICT enhance (promote) or complicate (inhibit) existing services?'

Data from Victoria supported the original model by suggesting that ICT should be embraced as a 'liberating technique' to promote successful GEMSD, allowing

‘smarter ways of doing things’. However the data continued by suggesting the transition period was important as most ICT would take time to bring into use. Many legacy systems are yet to be ‘killed-off’ as production systems thereby inhibiting GEMSD transition. The extension of this theme was that standards needed to be developed across government to ensure successful transition on all platforms electronic and mobile.

With the business re-engineering AOS domains supported by the data, the original business re-engineering AOS model diagram is validated and the final diagram is shown in Figure 26 below:

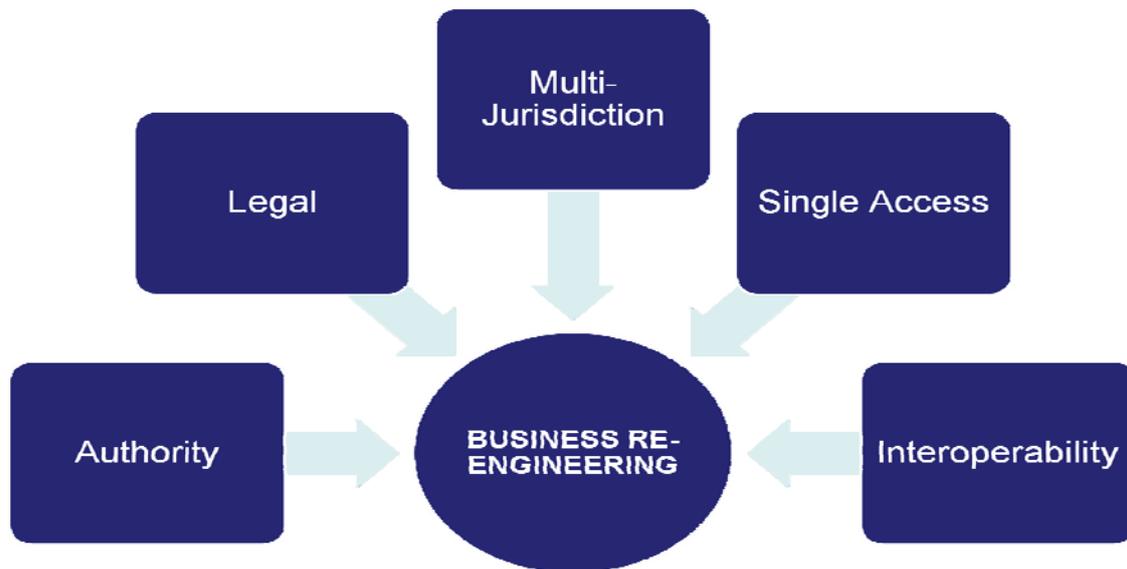


Figure 26 Final GEMSD model Business re-engineering AOS

The final business re-engineering model varies from the interim model with more emphasis placed on multi-jurisdictional product and service provision in advanced GEMSD systems. This was primarily due to data experiences from overseas and their advanced experiences in relation to the Victorian data.

6.3.3 AOS Security questions

The five security AOS domains were generally confirmed by the data with the order of domains changing slightly from the original model proposed in chapter 3. Major concerns in the security AOS domains were a combination of external malicious threats, internal data integrity, and identity theft. A general concern about transitioning legacy systems to cope with electronic and mobile requirements was evidenced in the data. Two interesting facts from data were: firstly a general lack of knowledge in relation to the legislated requirements for information protection; and

secondly the overseas scenarios did not have the same degree of difficulty with identity theft, as they employ personal identification facilities such as the American social security card or a unique identifier for every individual, a practice which is not available in Australia. Documented analysis of the eGovernment resource centre and records from individual agencies supported the concerns regarding internal data integrity and identity theft; however there was an absence of material on transitioning from legacy systems to GEMSD.

With regard to the individual research questions, the first security AOS domain related to stability of service and malicious damage in GEMSD. In general data confirmed the inclusion of this domain in the security AOS model as valid. Victorian data suggested two streams of contention in this domain: the obvious threat of internal and external malicious damage from scenarios such as disgruntled employees, abuse of position; or external hacking and disruptive communication services. The research question posed was:

'Does communications stability decrease the susceptibility to malicious damage and eventually promote successful GEMSD security?'

Overseas data was rich with anecdotal evidence supporting the model with examples of 600,000 hacking attempts per day and communications stability fending these attacks thereby promoting GEMSD success. Victorian data continued suggesting that the severity of the issue warranted considerable investment in resources to promote a stable environment for GEMSD success. It was interesting to note that only the overseas data reflected a strong legislative responsibility for GEMSD security of service.

Victorian data supported the second security AOS domain with emphasis on identity theft as a major theme. This was not echoed by overseas data. In contrast overseas data noted the use of unique personal identifiers as a means of preventing such occurrences in their respective jurisdictions, a situation which is not available to Australian and Victorian jurisdictions. The original research question was:

'Does the across government data integrity inhibit or promote the occurrence of fraud and the overall success of GEMSD security?'

With this view the data does support the original model although it would appear that unlike overseas governments, Australian and Victorian jurisdictions are at a

disadvantage with an inability to utilise unique personal identifiers to promote GEMSD success in this domain.

The third Security AOS domain was centred on transaction auditing and transparency of service. Victoria provided some curious data in this area with only a small percentage being aware of legislative requirements to perform regular transaction audit and transparency checks. However the majority of data supported the original model based on the research question of:

‘Does routine transaction audit and transparency promote or restrict the success of security in GEMSD?’

The supporting data suggested this would promote success; similarly all overseas data confirmed this without exception. Data further revealed that in at least one overseas experience a separate organisation had been established to specifically deal with GEMSD transaction auditing to pursue reporting and security excellence. Victorian documentation data disclosed forthcoming legislation requiring a higher level transaction auditing for security purposes. Similarly interview data revealed few departments or agencies were aware of the new legislative requirements due at the time of this study.

The research question associated with domain four was:

‘Do legacy systems inhibit GEMSD security and can future technologies be facilitated successfully?’

Victorian data was mixed on this issue as it was seen as a sensitive area, many chose not to respond to this area however those who did had differing opinion. The overall reality was that legacy systems did not seriously impede GEMSD success however data did suggest it can inhibit success but only ‘mildly’. This result lessens the value of this domain and therefore its importance in the final model. Whilst it is still included as a domain for consideration its ranking or importance is the lowest of the security AOS domains.

The final AOS domain in security deals with the central warehousing of GEMSD data as a promoter of success. The research question was:

‘Will the central warehousing of data promote or inhibit the success of GEMSD security?’

Both Victorian and overseas data supported the original model that central warehousing promoted success in GEMSD initiatives. There were themes which qualified this however. The most prominent was a consistent indexing system to maintain integrity of data across whole-of-government particularly if services were to be redefined across departmental and agency jurisdiction; this included the mammoth task of initial setup and validating existing records. Again the overseas data relied heavily upon the unique identity numbers as the key to this indexing issue. Other data suggested virtual central warehousing (VCW) as an interim solution to central data warehousing with enterprise scalable application which would easily accommodate legacy systems by simply using an image from the legacy data to work with, however this still had inherent data integrity problems if it were to be used to update original systems. However across the majority of data the perceived benefits of central warehousing were: ‘the abundant efficiencies (and) significant savings from central data’; the ‘enterprise scalable system, (and) the ability to introduce enhanced systems and modifications in one place’ across government; as well as the duplication of records or the ability to keep one record for multiple government purposes.

While the security AOS domains were generally supported by the data, the original security AOS model diagram has been modified in relation to the results of all data to reflect a new and validated final diagram shown in Figure 27 below:

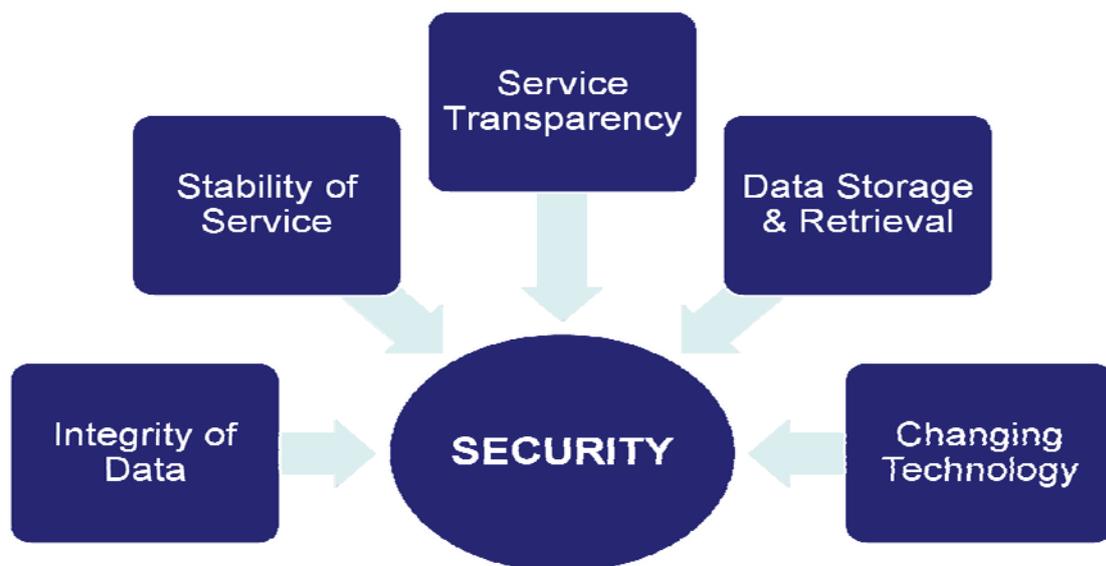


Figure 27 Final GEMSD model Security AOS

The security AOS model varies from the interim model of chapter 3. Evidence found in data suggested the integrity of data across government was of paramount importance and displaced service stability as the most important domain within security AOS.

6.3.4 AOS Access questions

Data, particularly the documentation from departmental and agency records, indicated there was a considerable shift in customer usage patterns and access methods including greater mobile and electronic patronage. In the interview data not all opinions agreed, however there was a strong nucleus of opinion that supported the documentation analyses yet it failed to identify a significant increase in ex-patriot or transient customer access whereas documentation did. Therefore the data has generally supported the original model.

The first domain of the three access AOS domains answered the research question:

‘Does the use of kiosk or ATM style service delivery mechanisms adequately service geographically remote areas or does it inhibit GEMSD success in this area?’

Data varied in complexity and attitude to this domain however the overall opinion supported the original model. Dominant opinion was that government was ‘lagging behind business’ in many areas of servicing remote geographic areas however some of the government agency services such as the mobile delivery services used by SWHN and the Royal District Nursing Service were an example for others in Victorian government. Their ability to rapidly deploy services to remote areas through wireless and mobile technologies was considered exemplary. The simple example being the use of IP video conferencing to provide specialist health services to remote areas. A small shopfront outlet in remote South West Victoria is linked to a qualified pharmacist in a larger regional centre by IP video-conferencing across a quick deployment wireless broadband connection. The local shop assistant shows the pharmacist the prescription, the pharmacist identified the required medication and advises the shop assistant which stock item to dispense. This rapid deployment of services allows the use of existing resources to cover remote areas at minimal cost and maximum response, a simple benefit of GEMSD.

The second domain in the access AOS was concerned with stakeholder involvement in GEMSD, the research question being:

'Does community group and stakeholder involvement promote or inhibit GEMSD success particularly for those users with access disability?'

Data returned confirmation of the interim model with a majority support. A minority opinion was that government had to lead initiatives without stakeholder involvement. Further clarification of this opinion revealed there was a substantiated reason in some emergency KPI GEMSD projects, generally of a sensitive nature, however these were the exception to the norm.

With regard to access disability Victorian data highlighted the public deployment of access facilities in community based facilities such as Vicnet's library program where services were available to remote area libraries. The limiting factor in this opinion was bandwidth with ever growing demands on finite services. However the growth in mobile and wireless infrastructure was seen as a means to overcome short term deficiencies. Data majority supported community and stakeholder involvement to facilitate better and more successful GEMSD projects and implementations.

The last access AOS domain dealt with servicing transient and ex-patriot government constituents. The research question being:

'Does consistent single access portal promote successful use by transient users?'

The majority of data suggested the nature of GEMSD was conducive to transient and ex-patriot usage with anecdotal evidence of considerable traffic from transient and ex-patriot customers. Similarly the 24/7 access delivered by GEMSD was superior to traditional telephone and over-the counter services which limited access and proved more costly than GEMSD. The availability of information pod-casts to mobile telephones with basic information or brochure-ware and website information templates helps to distribute services effectively and is a need of government customers.

The major issue emerging from the data was the successful use of credit card payment for GEMSD services. At the time of this study the Victorian data suggested many departments or agencies are at various stages of GEMSD implementation, and consistent across government servicing of transient and ex-patriot customers was still on an individual department and agency basis which undermined the single access to services approach desired by this domain.

The access AOS domains were generally supported by the data, the original access AOS model diagram has reflected the results of data and is validated in the final diagram depicted in Figure 28 below:

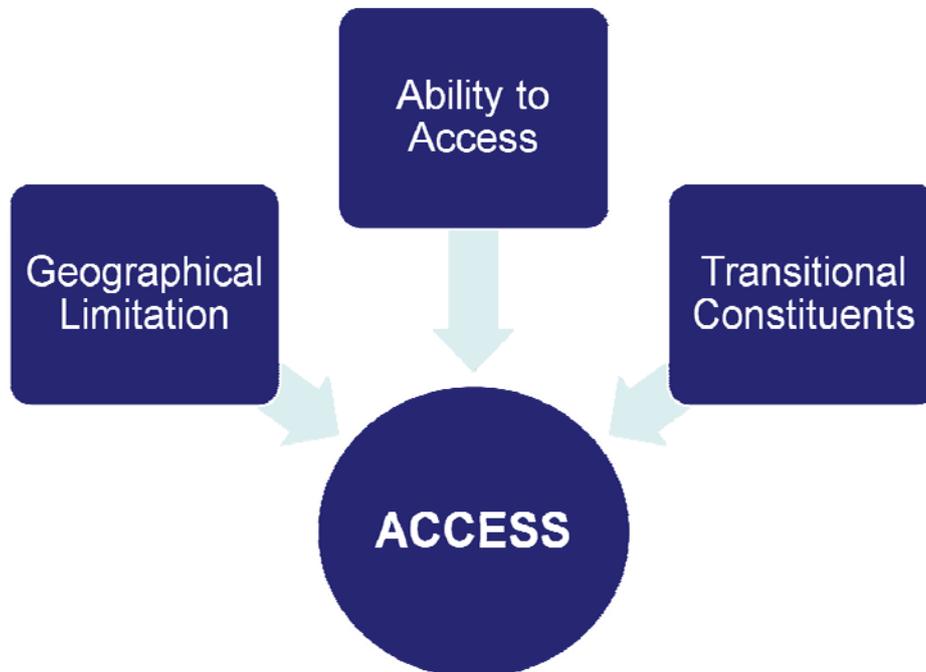


Figure 28 Final GEMSD model Access AOS

The access AOS model is unchanged from the interim model of chapter 3.

6.3.5 AOS Education questions

The five education AOS domains were generally confirmed by the data. Not all data opinion agreed, but generally it supported the interim model with centralised authority with political support, cohesive legal and regulatory environment, single access portal, supporting the success of GEMSD.

Domain one of the education AOS related to reclaiming benefits of GEMSD through ICT literacy and the reduction of service duplication with traditional labour and cost intensive services with electronic and mobile service provision. The research question posed was:

‘Does ICT literacy promote the use of GEMSD and do fully duplicated service delivery mechanisms inhibit GEMSD success?’

Data from Victoria strongly supported the interim model and this result was echoed by the overseas data. All confirming ICT literacy promoted successful GEMSD and

fully duplicated services would help initially in GEMSD projects. Data was supported by anecdotal examples of ICT uptake and transfer of services to GEMSD. However there were two emergent themes. One theme suggested traditional or over the counter services would be absorbed into GEMSD totally. The other theme believed there would always be duplicated service delivery. The practical mean between both is; that services will be duplicated for a variety of reasons including full access provision; the lack of ability to access GEMSD; or personal choice not to use GEMSD. But the long-term projection is that more and more services will be gradually withdrawn from traditional service access points in favour of GEMSD. Further discussion in this domain revealed a general reality that whilst the withdrawal of costly traditional delivery mechanisms should have a cost reduction effect, this may not be the case with GEMSD ‘empires’ absorbing displaced staff and resources rather than truly offering a cost reduction to government and customers.

Domain two focused on educating GEMSD customers to the proposed benefits of 7/24 access and the inhibiting factors associated with maintaining departmental or agency based service delivery. The research question in this domain is:

‘Does 7/24 access promote more successful GEMSD and does the maintenance of multiple office access points inhibit success?’

Both Victorian and overseas data generally supported the interim model and Victorian and overseas documentation was plentiful on the uptake of this GEMSD benefit. Common themes emanating from data were the use of non-traditional hours such as weekends and weeknights as well as the ‘better value for public dollar’ use of resources in less costly delivery mechanisms which operated for superior trading hours. Some data reflected better quality of service by allowing constituents to access services when time permitted and therefore government being less intrusive on their customer’s limited time. Also data noted the comparatively high cost of having to maintain offices across, sometimes, large jurisdictions and the need to staff these offices giving rise to multiple redundancies in service. However data noted that most GEMSD traffic transactions were of a routine nature and any ‘out-of-scope’ enquiries required email, text or video responses which would extend an enquiry time.

The third domain was more introspective examining acceptance of the GEMSD delivery mechanism and focused on operating environment with the research question:

‘Does a standard operating environment promote customer acceptance and does competing technologies inhibit success of GEMSD initiatives?’

Whilst Victorian and overseas data supported the original interim model it was clear that overseas experiences were more advanced than Victorian. Two SOE themes from data related to either adapting GEMSD SOE to ‘the lowest common denominator’ amongst the constituents or being prescriptive in SOE and making the constituent customers evolve with changes in technologies. Data noted that the prescriptive theme was more applicable to business and other government users more so than private or individual customers. The nature of the service being delivered was generally the deciding point upon which the SOE was predicated. This is a complicating factor for across government services when re-defining the services to be delivered by GEMSD. In relation to competing technology syndrome, data did note that GEMSD should avoid being ‘locked-in’ to specific technologies and should remain vendor and product independent. Overseas themes were similar however their advanced experiences strongly echoed the vendor and product independence theme and the need to publish technical architecture and interface recommendations. The data continued to add that with new and emerging technologies it was sometimes necessary to utilise vendor driven solutions however this should give-way to open platform, vendor neutral solutions after initial establishment of services and greater competition in the technology market place. The emphasis was not to get tied into lengthy vendor solutions in the first instance as other offerings will follow shortly after possibly with better operability and open platform design. Whilst this countermines the PPP domain of cost AOS there is a compromise situation based on pilot implementations and/or phased transition to full production GEMSD incorporating market advances.

Domain four was engaged in the re-defining of services and products on a whole-of-government basis. The research question asked if these would promote success or is the existing agency based products and services enough for successful GEMSD.

‘Does the re-definition of government’s products and services promote or inhibit successful GEMSD or does the existing agency based system suffice?’

Data on this domain demonstrated the territorial or ‘turf-war’ nature of operating within government agencies and departments and as data of six interviewees emphasised ‘people are still keeping information for themselves’. Whilst this was a strong theme in data, the general finding was re-definition would not only promote successful GEMSD but improve service levels generally for the majority of customers. Also data suggested redefine would be a boon for certain sections of government with similar mandates such as emergency services who could normalise or reduce their records and services to far more streamline and efficient systems. The simplest example was police or fire services attending an emergency and being able to identify patients, communicating patient details to health institutions before patients arrive for treatment and health services being able to study medical records prior to admission, or even just reducing the time in the admission process. It is noteworthy that data generally reflected the opinion technology was not an inhibitor to this process and it was the human element which generally presented a barrier. This indirectly supports the authority domain of re-engineering AOS. Suggesting political intervention and authority was necessary to redefinition products and services for successful GEMSD. Overseas data echoed this stance with strong opinion ‘If I were Prime Minister I would have one database where I can access everything or put in controls’. Somewhat extreme but re-emphasising the strength of data present.

The final domain within education AOS centred on the introduction of new skill sets into government and governments being GEMSD ready. The research question in this sense was:

‘Has the introduction of new skill sets with GEMSD promoted successful service delivery or inhibited transition to GEMSD?’

Again the data proved rich with information. Data supported the opinion that users, and implementers were becoming more ‘ICT savvy’ and thereby promoting successful GEMSD. It revealed business was leading the way by transposing products and services on ICT technologies thereby ‘dragging customers with them’. This had a flow on benefit for GEMSD with many government customers being educated in ICT by the private sector initiatives. The other proposition was time and natural progression of school and university leavers would transfer greater ICT skills into the GEMSD arena. The other theme from the data was that governments were taking a more pro-active role in developing skill-sets within government. Whilst this

conflicted with the outsourcing of services to the private sector as described in the cost AOS, it did appear to be evolving with internal standards from specialist government units such as the Department of Premier and Cabinet’s Office of the Chief Information Officer (OCIO). This was viewed as an attempt to resolve the disparity between departments or agencies and promote consistent successful GEMSD across whole-of –government.

While the education AOS domains were generally supported by the data, the original education AOS model diagram has been modified in relation to the results of all data to reflect a new and validated final diagram as shown in Figure 29 below:

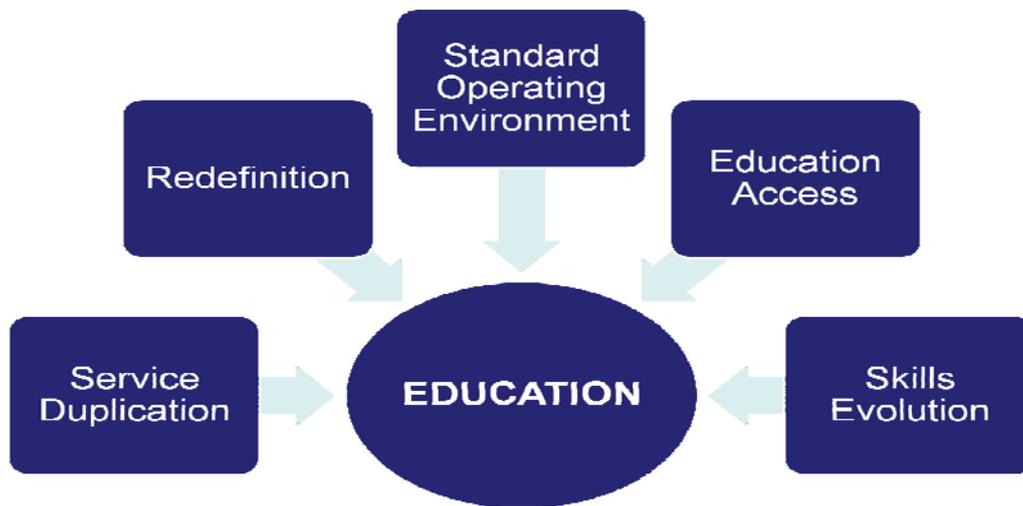


Figure 29 Final GEMSD model Education AOS

The education AOS model reflects a change from the interim model with redefinition of products and services being elevated in importance over SOE and education access. Similarly education access has been downgraded in favour of SOE.

6.3.6 AOS Acceptance questions

The five identified domains of the acceptance AOS were generally confirmed by the data and revealed the biggest issue to be gaining the cooperation of all the individuals/departments. Funding also was an issue from the data and whether GEMSD offers click and collaboration or ‘take a number’ system appears to depend on the project. The indication from data was that if it is just a self serve process then it is easier to facilitate ‘click and collaborate’ than if it is a complex process or requires agency input.

The first domain within acceptance AOS focuses on the issue of transparency of process and stakeholder review. The research question was:

'Does online review and stakeholder transparency promote successful GEMSD acceptance or does it create prejudices which inhibit success?'

Both Victorian and overseas data indicated stakeholder transparency as a promoter of success and therefore acceptance of GEMSD. Most data reflected that with GEMSD stakeholders and customers had more involvement and access to service progress and delivery than under traditional services. A side benefit was the sense of ownership and trust not forthcoming with previous service delivery methods. A major theme from data was a greater control over data by both government and customers. A number of anecdotal examples were recorded in the data and centred on the loss of records or difficulty in retrieving records under previous service systems. Another sub-theme from the data was the issue of data ownership with examples of medical records being the easiest to understand. For example if medical images such as X-rays or MRI's (magnetic resonance imaging) are taken and recorded digitally on government equipment, are they owned by the patient or the government?

Domain two dealt with the issue of demarcation between departments or agencies and the management of this area. The research question couched was:

'Do agency demarcations inhibit success of GEMSD and does agency relationship management promote success?'

The research question was quite political in nature and interview data was quite reticent from both Victoria and overseas with many opting not to respond or in the case of overseas 'there are no demarcation problems here'. However the data generated from documentation and responding interviewees was confirmation of the interim model. Significant demarcation was prevalent and centred on the issue of data ownership within government. The main positive theme emanating from the data was the need for data ownership rules to be legislated across government. A number of 'smoke screens were employed to evade sharing data across government.

Departments were using privacy laws as a means to retain data from other agencies or governments. Resentment over losing data was rife and the perceived threat of change prompted unusual activity. This was surmised by an overseas response citing the American September 11 bombings as the classic example of agency demarcation

and the inability to share data inhibiting success. This was significantly applicable to GEMSD.

The third domain in acceptance AOS was involved in government internal process participation as a means of acceptance for GEMSD success. The research question was:

'Does agency process participation promote GEMSD success or does it heighten inhibiting conspiracy prejudices?'

Victorian data was consistently strong in the confirmation of the original interim model. This was particularly evident in early stage GEMSD initiatives where it was very easy to be focused on individual agency or departmental goals rather than participating in the 'big picture' or whole-of-government approach and thereby delivering more success GEMSD quality and acceptance. Data suggested also that process participation at senior management would only advance GEMSD with a degree of 'political enticement and bludgeoning' by government. This raised another question of could bureaucrats outlast governments in this process but data could not resolve this theme.

Domain four was aimed at single-avenue or whole-of-government customer feedback as a success factor in GEMSD acceptance. The research question was:

'Does single access customer relationship management foster success or inhibit good service delivery?'

Data was mixed in this domain with Victorian opinion split between supporting the interim model and suggesting it be modified to incorporate better standards across existing GEMSD systems or establishing a whole-of-government 'editorial board' to prescribe feedback standards or memorandums of understanding. Generally it would confirm the original interim model because of the overseas strong support of central feedback avenues. Victorian data did note there were 22 separate call centres at the time of this study supporting government acceptance of GEMSD, more particularly the theme or 'turf-wars' and empire building shared by so many AOS domains came up yet again as a consistent recurrent theme.

The final domain of the acceptance AOS is concerned with actual improvement of acceptance of service to customers regardless of level or type. It asks if GEMSD

actually improves customer service and therefore acceptance or is it just the same services transposed into electronic and mobile format? The research question was:

‘Does electronic access (click and collaborate) promote acceptance of GEMSD or is it the same as traditional service delivery methods (take a number)?’

Data was strong in this domain however whilst the original interim model was confirmed, Victorian data suggested a slow acceptance or growth in the area. This was in contrast to overseas data which strongly confirmed the ‘click and collaborate’ culture as alive and well in their respective jurisdictions and therefore successful GEMSD acceptance. The Victorian equivocation centred on ‘If the service requires human intervention it is basically a take a number’ although data did identify five Victorian departments had done away with shop front service delivery in favour of a wide range of digital lodgement and retrieval facilities thereby implying total acceptance. Further interrogation of documentation data confirmed this was not based on a departmental prescriptive decision but acceptance demand from customer groups.

With the acceptance AOS domains supported by the data and the interim acceptance AOS model diagram validated, the final revised diagram is depicted in Figure 30 below:

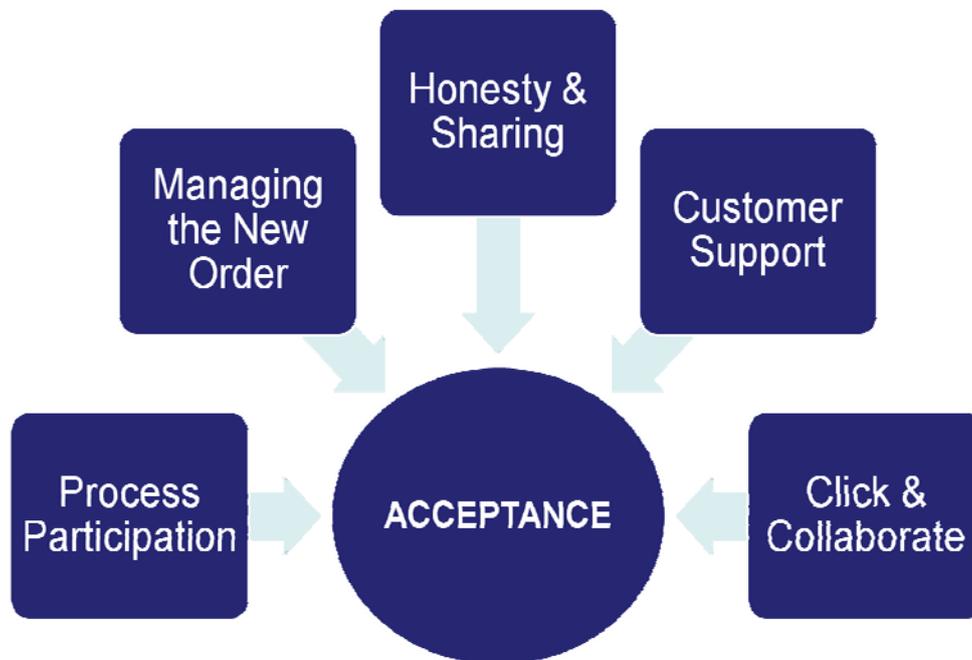


Figure 30 Final GEMSD model Acceptance AOS

Process participation was identified by documentation and interview data as the most important domain within the acceptance AOS and is reflected in the final acceptance model. Whilst the transparency of honesty and sharing was important it was relegated below managing the new order and varies significantly from the original interim model.

The next section discusses the variation in domain relationships when compared with the original interim model proposed in chapter 3 and highlights those differences revealed by the data.

6.4 GEMSD model findings by domain relationships

The positive and negative relationships identified in the interim model were in general very accurate and were confirmed by data. Also the data confirmed the existence of both positive and negative relationships within the GEMSD model. Consistent with the interim model these types of relationships are depicted in all diagrammatic representations as green for positive and red for negative. Those domains not influenced or related are again represented in grey. Whilst most relationships were confirmed by data there are some notable relationship inclusions as direct result of themes identified when validating the interim model with data from documentation and interview. These were an additional four positive relationships and one negative relationship which increased the total number of domain relationships from seventy-three to seventy-eight. In addition to the seventy-eight relationships there are comments on other areas which impact the model but are not direct relationships however noteworthy. These comments are included in each of the revised AOS and domain relationship sections.

6.4.1 Revised Cost AOS and domain relationships

The original seventeen domain relationships identified within the interim cost AOS domain relationships model were consistent with data analysed. The relationships were with domains business re-engineering, education and security. The four negative and thirteen positive relationships remained consistent. However a fourteenth positive relationship was identified by data as seen in Figure 31.

Relationships within the GEMSD Model
Cost

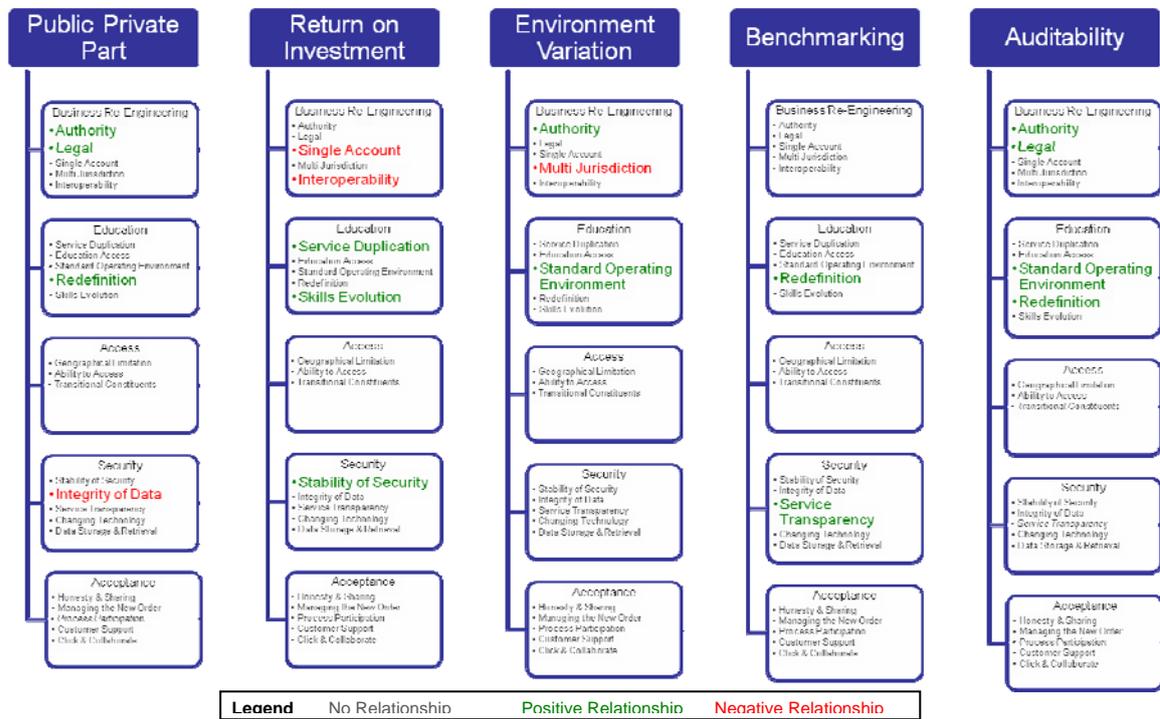


Figure 31 Revised GEMSD cost domain relationships

The fourteenth positive relationship exists between benchmarking and authority from the business re-engineering AOS. Data showed that with an increase in prescriptive benchmarking from an authoritative source such as the Office of the Chief Information Officer (OCIO), there was a corresponding positive increase in the amount and quality of benchmarking occurring across government departments and agencies. This was specifically attributed to the political authority given to the OCIO to override and establish a government-wide holistic approach to the Victorian government. This does not necessarily mean that these prescriptive standards are adaptable to every government environment however it does suggest that benchmarking should be conducted on a standardised scale for those departments and agencies within that particular government jurisdiction.

6.4.2 Revised Business re-engineering AOS and domain relationships

Both Victorian and overseas data supported the twenty relationships proposed in the original interim model including the two negative relationships with cost and access domains. This is represented in Figure 32 below.

**Relationships within the GEMSD Model
Business Re-Engineering**

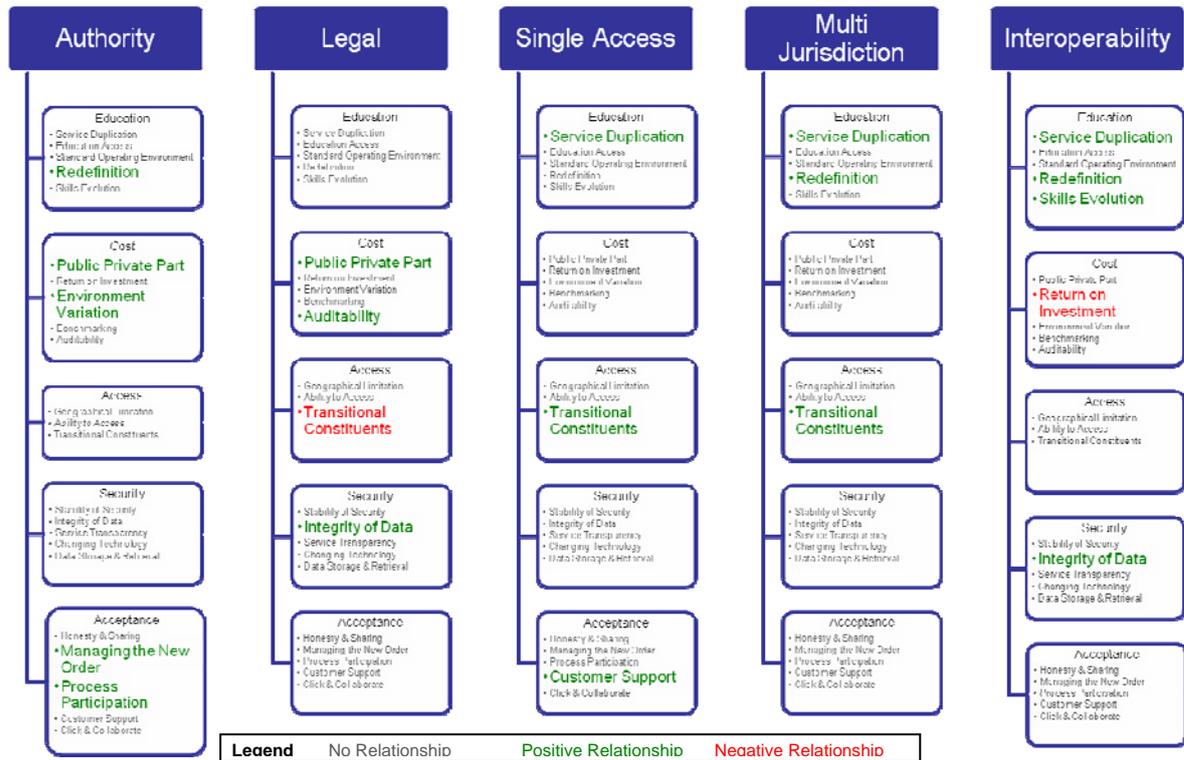


Figure 32 Revised GEMSD business re-engineering domain relationships

While data supported the interim model as valid it is worth noting the occurrence and strength of data in relation to demarcation and ‘turf-wars’. Victorian data, particularly at interview, had a reoccurring theme of strong cultural problems with change management in government emphasising the demarcation and ‘turf-wars’ in relation to GEMSD initiatives. This theme was reflected in responses to many questions and with further prompting at interview many anecdotal examples were forthcoming. Of the participants interviewed twelve made direct reference to this dilemma. This study does not attempt to weight the relationships within the GEMSD model however it cannot ignore strength of response present in the data relating to this domain factor. Therefore a positive increase in authority such as a political champions or higher echelon drive will yield a similar increase of activity in the redefinition domain. This can abate some of the demarcation and ‘turf-wars’ which seem to be so prevalent in data examined from interviews and documentation.

6.4.3 Revised Security AOS and domain relationships

The twelve positive, and one negative, relationships within the security AOS were generally supported by Victorian and overseas data and are consistent the original interim model as seen in Figure 33.

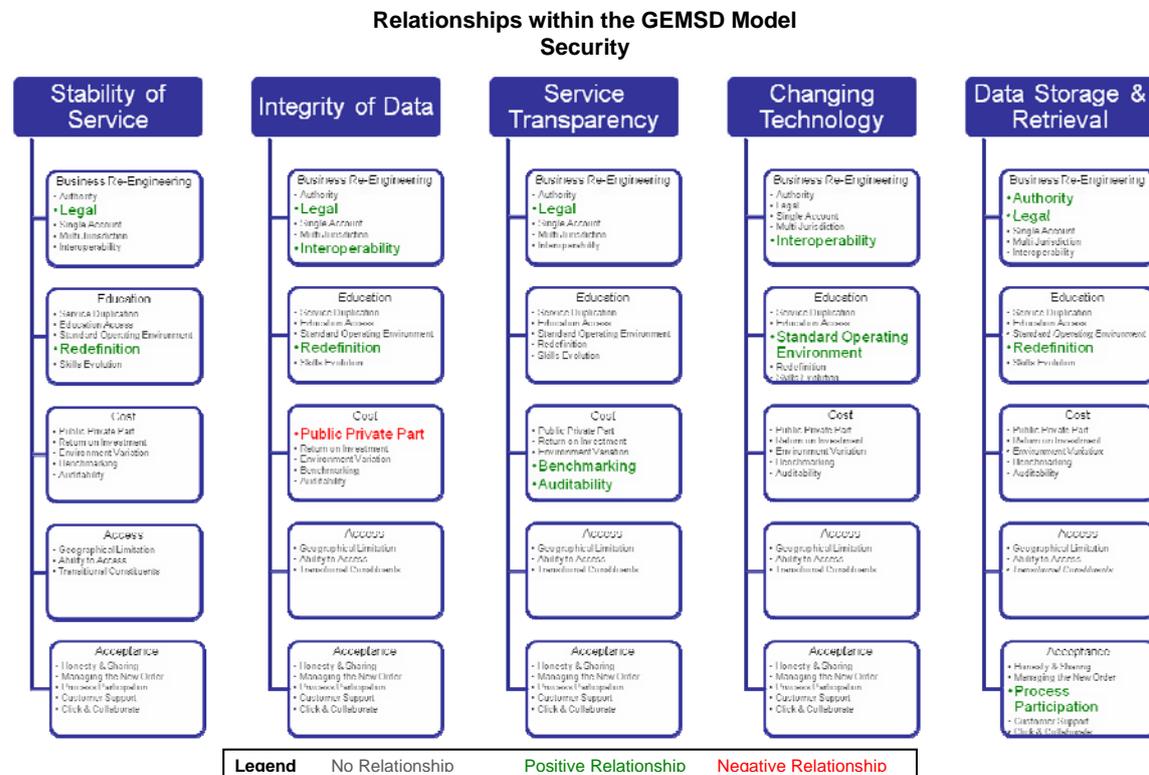


Figure 33 Revised GEMSD Security domain relationships

However interview data and documentation did disclose a thirteenth and fourteenth positive relationships in this AOS which is reflected in the revised GEMSD security domain relationship model also. The thirteenth relationship exists between data storage and retrieval and the legal and regulatory domain from business re-engineering AOS. A positive relationship is present as an increase in legislative requirements or framework in the information storage with create and equal increase in highly evolved GEMSD systems with standardisation of data management systems to facilitate the legislative requirements. In the Victorian data, both interview and documentation, legislative provisions in relation to privacy were a popular topic. Although at the time of the study some had not yet been enacted there was a strength of understanding which foreshadowed standardised changes in the way and methods of data storage and retrieval which seemed ahead of overseas initiatives and while Victoria/Australia do not enjoy the ability to have unique identification of individuals

such as those in Finland and Singapore, there is a growing awareness of required practices by GEMSD practitioners of the need for good legislation and regulatory framework to support good storage and retrieval. As a natural follow-on the fourteenth relationship identified from data is between authority from business re-engineering AOS and data storage and retrieval. It is in some way due to the redefinition of services across government as a positive relationship will exist with authority when an increase in prescriptive data and storage standards across government from authoritative areas such as OCIO will see a corresponding increase in data and storage activity. Whilst this would seem obvious it was emphasised by data from Victorian and overseas and therefore noteworthy.

6.4.4 Revised Access AOS and domain relationships

Access AOS is the smallest of the AOS the three positive, and one negative, relationships were generally supported by both Victorian and overseas data. There was less importance given transient or ex-patriot usage and data failed to identify a significant increase in ex-patriot or transient customer access whereas documentation did. Regardless the overall findings are consistent with the original interim model as shown here in Figure 34.

**Relationships within the GEMSD Model
Access**

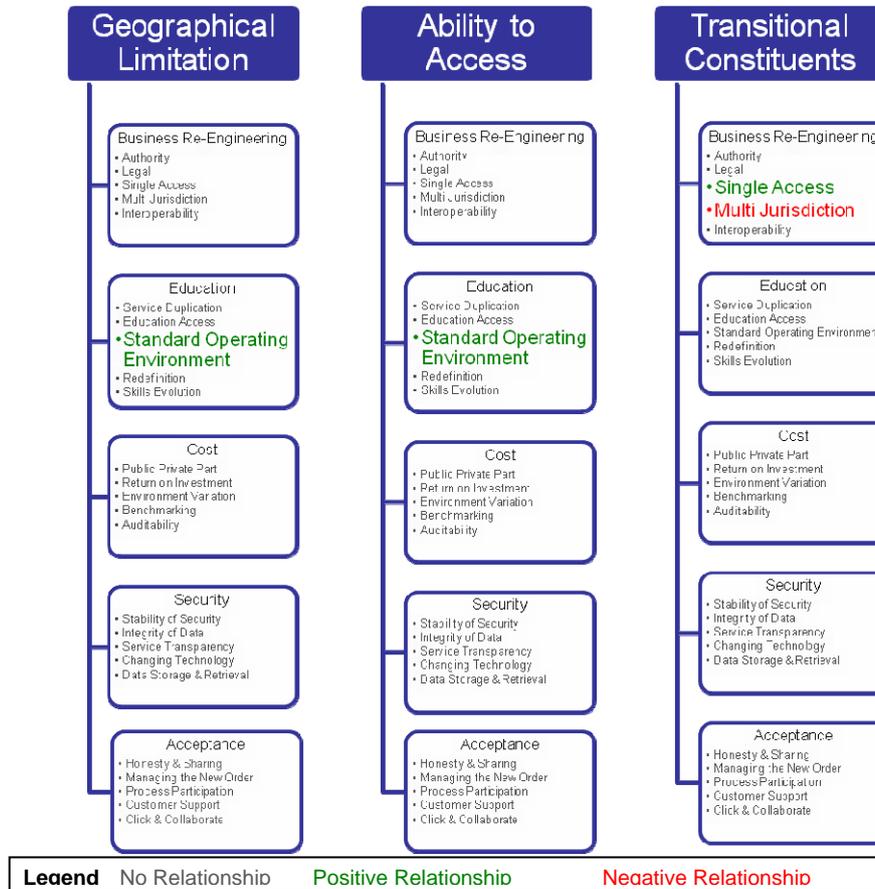


Figure 34 Revised GEMSD access domain relationships

Also interview data revealed the issue of geographical remoteness which was a problem for early GEMSD initiatives in Victoria was no longer as serious as first encountered particularly due to the deployment and use of mobile government solutions. The examples of the RDNS and the SWHNs were very valid examples of why this issue was no longer as prevalent. The SWHN example of remote service delivery of pharmaceutical services via mobile IP videoconferencing was particularly enlightening and serves as a role model for other jurisdictions still faced with remote servicing problems.

6.4.5 Revised Education AOS and domain relationships

The nineteen positive domain relationships within the cost AOS were consistent with data analysed and support the original interim model. Similarly the two negative remained consistent with findings in the data and shown in Figure 35.

**Relationships within the GEMSD Model
Education**

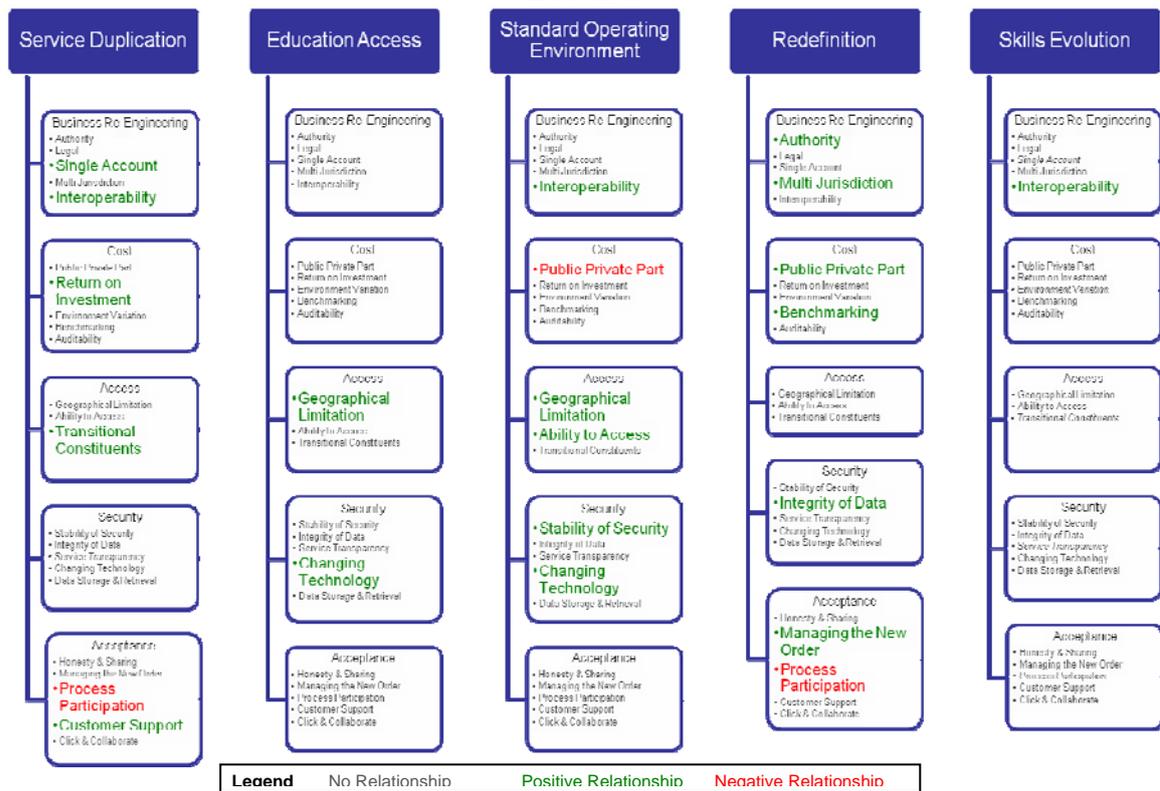


Figure 35 Revised GEMSD education domain relationships

However a strong inhibitor to SOE was revealed by interview data citing that early GEMSD platforms were tied to vendor driven product and unable to share the holistic benefits of SOE particularly in relation to newer technologies and especially in the use of mobile platform technologies (SMS, WAP). This generated a third negative relationship being between SOE and cost AOS PPP were and increase in PPP may lead to a decrease in SOE as many vendor based PPPs are incapable of implementing and sustaining government’s SOE choices ‘We still have issues with PDA’s working properly in a standard operating environment, these are just ridiculous things’. Strong themes that emerged from the domains in this AOS included the reoccurring problem of demarcation and ‘turf wars,’ the success of redefinition of services across government, although data was limited by the territorial nature or the ‘turf war’ problem, of the data available the results of success out-weighed the process negatives and was determined to be an important theme across government.

6.4.6 Revised Acceptance AOS and domain relationships

Both Victorian and overseas data supported the ten positive relationships proposed in the original interim model including the one negative relationship with business re-

engineering domain. Figure 36 shows the relationship between acceptance domain and the other domains business re-engineering, education, and security.

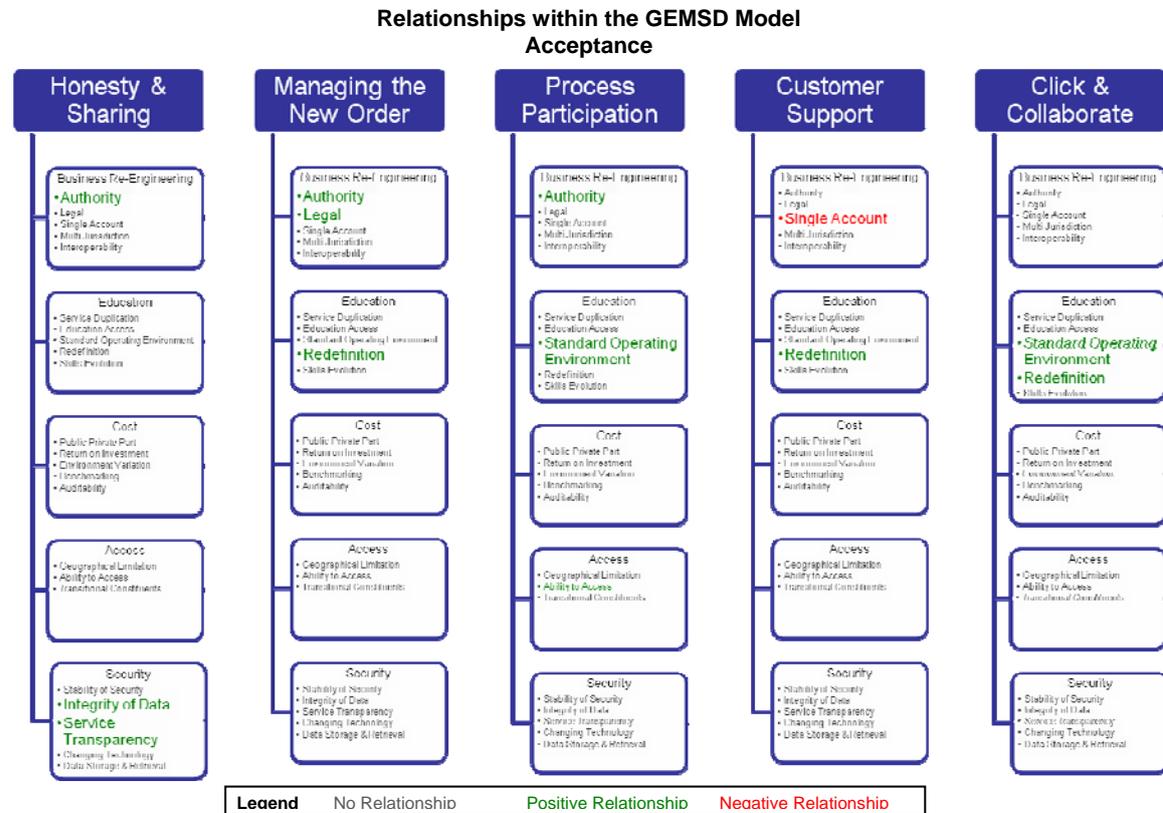


Figure 36 Revised GEMSD acceptance domain relationships

Whilst this AOS and domain relationships are ranked as last in the GEMSD model it sparked the most controversy of all. In relation to questions 12a and 12b at interview initial response in relation to demarcation and disputes was short and curt yet further investigation, particularly into question 12b, revealed this to be one of the most prevalent inhibitor to GEMSD success, namely the ‘turf wars’ theme again. As such a positive relationship was added to the acceptance domain relationship between honesty and sharing domain and authority domain from business re-engineering. It was evident from data that unless a positive increase in authority existed there would be minimal increase in honesty and sharing between departments and agencies. It is worth noting that the single access portal data supported the interim model yet there is a strong belief there is much room for improvement through better technologies and a more user focused perspective which should incorporate multiple levels of government.

6.5 Conclusions

The evaluation of the initial model and comparison with the major case study data from interviews in Victoria, supplemented with those of Finland, Singapore and the World Bank, has produced a revised GEMSD success factors model, which has been tested and validated.

A theoretical model was derived from the literature reviewed in chapter 2 and proposed in chapter 3. That theoretical model has been subjected to validation according to the methodology adopted in chapter 5 and results examined in chapter 5. This chapter has presented the refined model based on the data examined.

Regardless of government jurisdiction, technology employed or the stage of GEMSD evolution, the resulting model provides a useful tool for practitioners involved in the theory, practice or policy of public service delivery by electronic or mobile mechanisms. Through this study, astute managers in government and implementers are now provided with a tested model to provide efficiencies and better delivery of service to their constituents. It constitutes a substantial advancement in the body of GEMSD knowledge and delivers useful information to practitioners involved in GEMSD or public sector managers contemplating initiatives in the area. Also it offers a benchmark to assist managers in measuring success or failure by the adherence to the success factors identified and classified.

In the next, and final, chapter recommendations are identified for further research in the area of GEMSD as a result of this study.

CHAPTER 7

FUTURE RESEARCH AND PRACTICE

7.1 Introduction

This final chapter introduces the research and practice, which needs to be undertaken in future studies. It then provides an answer to the original research question in the summary of the research and makes recommendations for further research within the context of the answer. Finally it draws the research together in the conclusion.

In the practice of this research, a researcher intervenes in a situation so as to glean new knowledge, improve the understanding of a phenomenon, develop new theory, and of course ameliorate the problem situation of the client who is participating in the research. The following paragraphs do not attempt to distinguish research from practice as they are not separable in this context without that separation harming either or both of them. However, it does highlight the key issues that will be of importance in this field in the future. The chapter commences with the implications in relation to GEMSD research and policy

7.2 Research and policy implications

The study advances the body of knowledge in government service delivery. By analysing electronic and mobile service delivery success factors within government and modelling them into a usable format it provides practical support to government at a variety of managerial levels by providing condensed information to assist in the assessment of best practice modelling for their respective GEMSD environments. Moreover it contributes to the theoretical body of knowledge by applying these theories to modern government agencies, and thus attempting to bridge a gap that has existed since the GEMSD work conducted by Sing, et al in 2001 (Singh, Ryan et al. 2001). More particularly it advances knowledge in this area as it not only deals with electronic service delivery but, incorporates the growing area of mobile service delivery previously considered just a component or subset of electronic government. The interim model, proposed in chapter 3, is compared with the findings of the data and confirms the usefulness of the model for GEMSD practitioners.

With the burgeoning growth in mobile government service delivery this study has recognised and incorporated considerations peculiar to the delivery of services on a mobile platform.

It also contributes to new public management and Information Systems literature by shedding light on the success factors contributing to GEMSD projects. The study contributes to international comparisons in the context of their respective experiences of GEMSD. It adds to ongoing discourse of Information Systems and ICT factors in GEMSD.

The revised model presented in chapter 6 assists public managers of GEMSD in understanding the new delivery mechanism based on experiences of others from a review of contemporary literature and provides them with the benefit of careful analysis of the Victorian experience, overseas experiences in Finland and Singapore and a careful comparison of literature and practice. Further it enables them to implement and review GEMSD more effectively by emphasising the crucial importance of the domains and individual success factors associated with GEMSD. Along the core AOS of the model, exploration and exploitation, some specific practical recommendations for the conception and implementation are provided in the GEMSD model findings by AOS. However on a higher level the general findings reflect an affirmation of the interim model with little change.

7.3 Research outcomes

The proposed objectives of this research were to

1. Develop a success factors model through identification of those factors and classify into AOS and further classify into domains from a comprehensive literature review.
2. Examine the relative importance of these AOS, domain factors and relationships in promoting successful delivery of government services using GEMSD.
3. Validate the usefulness of the model for those planning and implementing GEMSD through applying the interim model to the Victorian experience and further comparison with overseas experiences in Finland, Singapore and the World Bank.

It is considered that these research outcomes have been satisfied and validated. In accordance with the research epistemology and ontology adopted this research has met the objectives, aims and validated the hypotheses proposed in chapter 4. An interim model was developed from an extensive review of literature. The individual factors promoting or inhibiting success within GEMSD were identified and classified into domains. Relationships between domains were drawn and recorded. The usefulness of the interim model was validated by applying the interim model to the Victorian government experience and compared with Finland, Singapore and the World Bank. The model was presented to the international academic community in Europe, McMillan and Sandy (2005) and was positively received.

The specific outcomes were:

1. The case study experiences confirmed the predictive usefulness of the model, and provided a useful tool for governments contemplating embarking on systems service delivery or to provide a more sophisticated service delivery.
2. Also the case study experiences confirmed the usefulness of the model for governments in reviewing the efficacy and positive intervention of existing GEMSD projects and initiatives.
3. Major success factors were incorporated in the model although it must be noted that the relative importance of each factor can change with different levels of service delivery or jurisdictional variation.
4. The model incorporated the identification and categorisation of individual factors that affect GEMSD as either promoting or inhibiting GEMSD service provision success.
5. A further classification of these individual promoter and inhibitor factors into easily identifiable 'domains' was provided as a further level of sophistication and a more detailed tool in assessing GEMSD progress.
6. The identification of the positive and negative relationships between domains within the GEMSD model were confirmed and provide another useful tool in promoting success of projects and initiatives and helpful to generate a relational awareness between detailed domains.

7. The identification and classification of domains into six logical grouping or Areas of Significance (AOS) was established as a useful tool organising individual factors and domains into useable groups for identification and analysis of value patterns within the core of the GEMSD initiatives.

7.4 Limitations of the research

The research confirmed the GEMSD model, AOS, Domains and individual factors inhibiting or promoting success. However there are limitations to the research and findings should be tempered or judged in context.

1. Governments and jurisdictions vary considerably in size, constituency and mandate. This study may have benefitted from comparator studies with Australia on a state to state basis, particularly in relation to larger states such as New South Wales and Queensland. As such it may be limited in the Australian context.
2. The research was limited to Victoria, Finland, Singapore and World Bank comment. It may have benefited from comparison with more jurisdictions from compatible OECD selection criteria such as size, constituency, geographical similarities and socio-economic development.
3. It could be claimed that the original data was old and not relevant however, the subsequent telephone interviews and updating of interviewee's opinion and experiences helped to validate the currency of data and note any significant changes which may have occurred or influenced their respective realities.
4. Although geographically and logistically challenging, it may have been beneficial to interview more participants from the comparator countries Finland and Singapore. Whilst the participants interviewed in Victoria and overseas were experts in their discipline, more interviews from overseas may have provided more extensive insight and comparison.

Despite these limitations, this research does identify, classify and group key findings relevant to the GEMSD phenomena and therefore extends the greater body of knowledge in the discipline.

7.5 Future research and practice

In the discussion of research and practice, there are a number of key issues to be raised. This research leaves a number of questions unanswered, and has suggested areas for future research activity. GEMSD is not historically identified as traditional information systems research; similarly it is not especially in the realm of public policy or management. This research has touched on a number of areas which require further investigation. One of the most prominent areas is the issue of internal government ‘turf wars’ and ‘empire building’ in relation to GEMSD. It has evoked a number of startling responses in the data ranging from the idea of bureaucrats trying to maintain traditional empires rather than fully embrace GEMSD, or transpose their existing turf into GEMSD empires. The data suggested also it would be ‘political suicide’ for any government to attempt to redefine services across departments and agencies as the bureaucratic backlash would be severe.

A table of suggested investigations in this new domain of GEMSD is provided in table 5 below.

7.5.1 Areas of research and target forums

	Area of research	Target Forum
1	Turf wars, demarcation and managing change in GEMSD	Euro mGov 2010
2	Weighting of relationships in the GEMSD model	Euro mGov 2010
3	Redefining silos of information to provide united mobile government	Euro mGov 2010
4	Identifying intangible cost recovery in mobile service delivery	mDevelopment 2010
5	Education for mobile customers-incorporating government users	mSociety 2010
6	Reducing service duplication in GEMSD	mDevelopment 2010

Table 5 Table of proposed investigations in GEMSD

By far the most important research to be conducted in the future is not a technology based issue but the organisational issue of demarcation, ‘turf wars’ and change management within GEMSD. The reoccurring theme was evident throughout interview data across many questions. Responses such as: ‘there is a classical territorial thing going on;’ ‘people are still keeping the information for themselves;’ and ‘the process is hampered by turf wars with others.’ As a theme resulting from

data it needs to be addressed as it presents a significant inhibitor to GEMSD success. Whilst this study has identified and categorised domains affected by this inhibitor it is not the appropriate vehicle to provide an in-depth study of the specific relationship problems between domains such as authority, redefinition of services across government, SOE and other domains which are inhibited by the inherent bureaucratic challenges of ‘turf wars’ and demarcation in government.

As a natural follow-on to an in-depth study of change management in GEMSD or in conjunction with such a study is research to weight the relationships that have been identified within the GEMSD model. This will allow researchers to fully explore the importance of individual domains and their particular importance at differing phases of GEMSD evolution thereby expanding the potential of the GEMSD resource generated by this study.

Work on the redefinition of services particularly the way existing government information is best utilised by government is an area worthy of future research. The existing silos of information within government need to be addressed to form a useful tool for all of government, not just departments or agencies who ‘own’ the data. Challenges such as interoperability incompatibilities brought about by lack of SOE or vendor proprietary systems need to be studied and understood in order to help government overcome this hurdle to successful GEMSD and therefore better service to jurisdictional constituents.

Research into the intangible cost recovery of GEMSD should explore the non-profit orientated services such as emergency service provision and examine the triple bottom line of introducing mobile service delivery into the market place. That is the social, economic and environmental dimensions of government’s use of GEMSD. Adjunct to the study of GEMSD triple bottom line is an understanding of the educational requirements of mobile service customers. The ability to identify, quantify and predict the usage patterns of GEMSD, similar to those techniques used in integrated demographic profiling of other electronic services, will help evolve mobile services to their full potential promoting better user understanding.

In addition to the areas of research proposed above a number of questions which require further research examples of these are tabulated below.

7.5.2 Future research questions

Table 6 depicts a number of possible future research questions yet to be answered.

	Possible future research questions
1	Once you're in a PPP who owns it? Who has ownership of the data? Who has ownership of the system?
2	Are existing regulatory checks and balances enough in successful GEMSD?
3	Can spheres of commonality within government redefine products and services in GEMSD
4	Is there a true whole-of-government service through GEMSD

Table 6 Table of possible research questions in GEMSD

In GEMSD specific research the question of ownership of government joint ventures or PPPs, the lines of demarcation in relation to data ownership, the ownership of generated material and the best interests of the public are worthy of future study. Also if PPPs are a core platform of NPM are the existing regulatory checks and balances adequate for this form of GEMSD, further are the existing checks and balances adequate for the current changes in GEMSD evolution and the whole-of-government GEMSD model?

Would the redefinition of government service to gain competitive advantage or better utilise GEMSD services benefit from the introduction of spheres of commonality other than the existing or traditional departmental and agency service boundaries. Could these boundaries be redefined to incorporate other levels of government? Subsequently is there scope for a truly whole-of-government service through GEMSD or will the traditional boundaries be maintained by bureaucratic empires and the on-going 'turf wars'?

7.6 Conclusion

GEMSD is widespread and plays a vital role in the provision of services to millions of people globally. This chapter has provided a publication strategy for conference and journal articles derived from this thesis' research. Also it has provided a table of possible topics for future research that extends this initial study. It offers a table of some example research questions in the area of GEMSD. As the GEMSD domain is a somewhat marginal and relatively new topic within the broader field of information

systems, it is important to demonstrate that reasonable consideration has been given to the future direction of realistic research and vehicles by which it is possible to continue to conduct and publish future research.

This research has delivered a model which assists in the understanding and progressing of this new environment for governments.

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APPENDIX A:

A.1 Relationship matrix within the initial GEMSD model

Relationships within the GEMSD Model	Business Re-Eng				Education				Cost				Access			Security				Acceptance									
	Political	Legal	Single Acc	Multi Jurisdiction	Interoperability	Service Duplication	Education Access	Standar Op Environ	Redefinition	Skills Evolution	Public Private Part	Return on Invest	Envrinment Variation	Benchmarking	Audability	Geographical limitation	Ability to Access	Transitinal Constituens	Stability of Service	Integrity of Data	Service tranparency	Changing Technology	Data Storage & Retrieval	Honesty and Sharing	Managing the New Order	Process Participation	Customer Support	Click and Collaborate	
Authority																													
Legal																													
Single Acc																													
Multi Jurisdiction																													
Interoperability																													
Service Duplication																													
Education Access																													
Standar Op Environ																													
Redefinition																													
Skills Evolution																													
Public Private Part																													
Return on Invest																													
Envrinment Variation																													
Benchmarking																													
Audability																													
Geographical limitation																													
Ability to Access																													
Transitinal Constituens																													
Stability of Service																													
Integrity of Data																													
Service tranparency																													
Changing Technology																													
Data Storage & Retrieval																													
Honesty and Sharing																													
Managing the New Order																													
Process Participation																													
Customer Support																													
Click and Collaborate																													

Legend

✓ Positive Relationship

• Negative Relationship

No Relationship

A.2 Interview informed consent agreements

All informed consent forms are available upon request for a period of 1 year and will be destroyed at the end of this time. A sample of the form follows herewith:


Victoria University
Consent Form for Subjects Involved in Research
INFORMATION TO PARTICIPANTS:
We would like to invite you to be a part of a study into: Government electronic and mobile service delivery - A success factors model
CERTIFICATION BY SUBJECT
I, _____ of _____
certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study: Government electronic and mobile service delivery - A success factors model being conducted at Victoria University of Technology by: Stuart McMillan
I certify that the objectives of the study, together with any risks to me associated with the procedures listed hereunder to be carried out in the study, have been fully explained to me by: Stuart McMillan, and that I freely consent to participation involving the use on me of these procedures.
Procedures: Recorded Interview
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: } Date:
Witness other than the experimenter: } } Date:
Any queries about your participation in this project may be directed to the researcher: Stuart McMillan, Tel +613 97739433. 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 MC, Melbourne, 8001 (telephone no: +613-9688 4710).

A.3 Interview responses

All interview transcriptions are available upon request for a period of 1 year after which they and will be destroyed at the end of this time.

A.4 Letter of support from the Victorian government



Department of State and Regional Development

Multimedia Victoria

Level 10,
55 Collins Street,
Melbourne Victoria 3000,
Australia.
Telephone (61 3) 9651 9868
Facsimile (61 3) 9651 8031
Internet: www.mmv.vic.gov.au

Mr Stuart McMillan
School of Information Systems
Victoria University
Room 1075 City Campus
300 Flinders St
MELBOURNE VIC 3000

Dear Mr McMillan,

cc: Dr Geoff Sandy

Following our discussions we confirm our support of your PhD research with Multimedia Victoria.

For this purpose we grant you access to staff to conduct interviews and surveys as necessary, and to information that can be made publicly available.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "Dr Jeff Rich".

Dr Jeff Rich
Acting Director
Policy and Regional Access

BIOGRAPHY of Stuart McMillan

Stuart McMillan has worked in the public (10 years) and private sectors (20 years) for over 30 years, primarily in computing and management environments. As a former director of the Pacific Frame Relay Forum and board member of the Advanced Networking Forum of Australia he has worked closely with governments and carefully monitored the development of government electronic and mobile services in this country.

Stuart is married with 4 children and holds a Masters degree in Information Technology from the Royal Melbourne Institute of Technology. He is currently a director of 2 companies and is a life governor of several community organizations.