

**Evaluating Local e-Government in New Zealand: A  
Socio-Technical Approach**

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## **ATTESTATION OF AUTHORSHIP**

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Yours sincerely,

(Braja Podder)

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## **ETHICS APPROVAL**

The research conducted as a part of this thesis has been approved by the Auckland University of Technology Ethics Committee, Reference Number: 04/235 dated 13 February - 2011

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## **ABSTRACT**

Government organisations around the globe have embraced e-government as a powerful tool to improve and reform how government operates and delivers services to citizens, the private sector, and other arms of government. While e-government initiatives have taken place at all levels of government, the implementation of e-government at the local government level is trailing behind national e-government progress in most countries, including New Zealand. Even though prior studies have provided a rich set of factors that are considered critical for adoption, the perceived high failure rate of e-government initiatives or their slow adoption rate has made scholars aware that existing models are inadequate. Further, there has been little research on local e-government maturity and the factors that influence citizens' participation in e-government and restrict local government bodies in their e-government initiatives. This study addresses these shortcomings by assessing the progress of local e-government in New Zealand, identifying citizen's expectations and factors that have influenced their participation in local e-government, and exploring the range of factors that have affected local e-government initiatives. A theoretical framework is developed using a socio-technical approach, which identifies a range of citizen-related, organisational, environmental and technological factors that potentially influence e-government development, implementation and use.

A multimethod research approach is used to collect the data needed to achieve the study's research objectives. First, a four stage e-government maturity model and a website maturity assessment instrument are developed from prior studies. All 67 New Zealand local council websites are assessed and the overall level of local e-government maturity is found to be in the information stage. Second, a web-based survey is used to collect data from 336 citizens across New Zealand. The results indicate that citizens perceive local e-government to be important and offer a relative advantage over traditional channels. Their awareness of online information and services available and their motivation to use local e-government are relatively low. This generally low level of motivation of citizens towards a digital engagement with their local councils could be, at least partly, the result of a gap observed in the study between citizens' expectations of local e-government, particularly around communicating, interacting and transacting online with local councils, and the current level of delivery of such services by New Zealand local government organisations. Third, semi-structured telephone interviews are used to collect information from officials at 44 local councils. The analysis of data shows that the main objectives behind e-government initiatives are to empower citizens, enhance customer service, improve citizen engagement, and reduce costs. The major barriers include lack of e-government strategy, broadband

access and skilled human resources, interoperability, inter-agency collaboration, and small organisation size.

The results of the three empirical research strands suggest that it will be difficult for local government organisations in New Zealand to meet the national e-government targets for 2020, progressing at their current pace. Without a strong mandate from central government or stronger citizen interest in and demand for local e-government, the proposed benefits of e-government focused on interaction, transaction and integration will remain largely unrealised.

## **CHAPTER 1 INTRODUCTION**

### ***1.0 Introduction***

The subject of this thesis is e-government adoption and use in the New Zealand local government context from both local government and citizen perspectives. This chapter establishes the background to the research, introduces the notion of e-government maturity, and summarises the various issues associated with e-government adoption and implementation. It then outlines the study's focus on e-government in the New Zealand local government context, before stating the objectives of the study and its significance to of e-government research and practice. The chapter concludes with an outline of the organisation of the thesis.

### ***1.1 Background to the study: e-government***

Diffusion of the Internet among the general population and the visible success of e-commerce in the private sector have probably motivated public sector organisations to consider the Internet as a viable option for the provision of information and services to the public, the private sector, and other arms of government. Public sector organisations around the globe have embraced 'electronic government', or 'e-government', as a powerful tool that can improve the ways they conduct and deliver services. Citizens may perceive e-government as an appropriate alternate channel for receiving government information and services any time and from anywhere, and one that can increase government efficiency. In one survey, 60% of citizens believed that government would be more effective if it chose to provide services online (Ebrahim & Irani, 2005). A 2008 survey of 6,500 New Zealanders considered public satisfaction with the quality of government services and revealed that 68% of respondents expected public services to be of a higher quality than those of the private sector, which was similar to the results found in Canada in 2005 (SSC, 2008). Thus, in light of promises of efficiency gains, improved quality in the provision of governmental services, reduction in paper work and cycle times, political accountability, consolidation of social cohesion, enrichment of relationship with citizens and business partners, competitiveness in the global electronic marketplace, a range of e-government initiatives have taken place and evolution of e-government continues apace. Jayashree and Marthandan (2010) are of the opinion that the key feature of e-government is the migration from a physical society into an e-society, where citizens will, ideally, be empowered to access government information and services seamlessly.

The evolution of e-government is, however, neither homogeneous nor static and the phenomenon has been studied by a range of theoretical and conceptual models (Schelin, 2003). According to Gil-Garacia and Martinez-Moyano (2006), the dynamics of e-governmental evolution is the result of pressures from public managers attempting to solve problems, and from citizens, business and other stakeholders attempting to control the actions of public managers. Both forces, related to performance and accountability create continuous pressures for the evolution of e-government definition and requirements. It is also recognised in the relevant literature that e-government development is not a one-step process; it cannot be implemented as a single project. Instead, e-government development has been found to be large, complex, and evolutionary in nature, involving multiple stages or phases of work. Public administrations face a number of challenges, including a lack of ICT infrastructure, the existence of a 'the digital divide', low levels of citizens' awareness, and varying political will. Furthermore, the objectives of e-government differ between countries. For example, e-government objectives in countries such as Norway, Brazil and the Netherlands centre primarily on establishing strong community links, while in Australia, the emphasis is on service delivery (Shackleton, Fisher, & Dawson, 2006). e-Government objectives also differ within countries, so that although the central and local government objectives might ostensibly match at a macro-level they can actually differ at a micro-level due to difference in government functioning and delivery of services and governance reflecting the different types of contacts citizens have with different levels of government. Due to these varying objectives, the challenges that e-government faces in a specific context are difficult to identify and overcome (Gil-Garcia & Pardo, 2005).

Publishing on a website, in the short-term usually represents an alternative and additional source of information over print publications, press releases and media broadcasts. However, there are the added complications of what to publish, when, and where, more particularly with legally sensitive information, and how to provide effective data security and privacy. The biggest concern for governments is the poor response of the public in the use of online information and services despite it being heavily publicised globally (Z. Al-Adawi, Yousafzai, & Pallister, 2005; Edmiston, 2003; Moon, 2002). One of the major setbacks to public support of e-government initiatives is due to the growing tension between technical standards, which are seen to emphasise and value efficiency, at the expense of privacy, an over-riding concern for most citizens (Jho, 2005). A study on levels of public e-government participation reveals that information availability and cheap communications by themselves do not have a significant impact on an individual's choice for involvement (Stanley & Weare, 2004). It is understood that the politically active

individuals, organisations, and people with easy access to the Internet, are the keenest adopters of e-government rather than the universal citizen (Stanley & Weare, 2004). Due to low public usage of and participation in this online channel, government agencies need to maintain the traditional channels with which they interact with stakeholders, besides deploying resources for the new channel and thus increasing the overall cost of delivering public services (Irani, Love, & Montazemi, 2007). Of course, this runs counter to the central e-government proposition where spending on e-government development is justified by a reduction in the cost of services (D. Evans & Yen, 2006). In order to improve governance and enhance democratic values, both organisations and their information systems need to be designed as a coherent whole using convergent architectures, which requires a new mind-set that is markedly different to the accepted power structures such as federalism and the separation of powers, geographic fragmentation and /or issues related to the agency's longevity and survival.

## **1.2 e-Government maturity**

The revolution in e-government has prompted nearly all countries in the world to adopt some sort of Internet presence or digital initiative to deliver a variety of information and services through their websites (United Nations, 2004). In order to meet the needs of their intended users and to maximise citizens' engagement with government, governments have placed a wide variety of content (such as text, images, audio, and video) on their websites. Substantial effort and resources have been expended to make these websites versatile, reliable and flexible. However, whether this has been achieved across all national contexts is debatable. For example, a study by Abdelsalam, Elkadi and Garmal (2010) identified that Egyptian government websites primarily provide information on Egypt, while features related to e-commerce or citizens participation were found to be the least available. Similarly, government websites were reported as not user-friendly or citizen-centric in general in Saudi Arabia (Al-Nuaim, 2011). Similar results have been reported by Rodrigo and Gil-Garcia (2010) for Mexico, Nurdin, Stockdate and Schepers (2012) for Indonesia, and Fielden and Malcolm (2010) for New Zealand local government websites. The citizen-centric e-government is conceptualised as online services that delivers *“increasingly cost effective, personalised and relevant services to citizens, but also serve to enhance the democratic relationship, and build better democratic dialogue, between citizens and their government, which then enhances the practice of citizenship within society”* (Ecotec, 2007, p. 2). Two studies (Al-Nuaim, 2011; Reddick, 2010) have recommended that citizen-centric e-government should improve website navigation thereby enhancing citizen satisfaction and countries have incorporated and implemented citizen vision in their e-government or digital strategies. For example, the

Netherlands embodies the channel-choice principle: “*As a citizen I can choose myself in which way to deal with government?*” (Ecotec, 2007, p. 8). On the other hand, the concept of citizen-centric e-government has been criticised (Brewer, Neubauer, & Geiselhart, 2006) for a number of reasons including alleged effects on equitable service provision, constitutionality and conflicting notions of public and private utilisation. The delivery of online client-centric services requires new coordination mechanisms that are more collaborative than traditional public sector regimes of decision-making and accountability.

In order to identify, monitor and benchmark the progress of e-government development, researchers and academics have proposed different types of ‘maturity models’. The features of these models have been conceptualised in various ways and have been implemented through a number of stages of development. Windley (2002) described a maturity model as “*a method for judging the maturity of the processes of an organisation and for identifying the key practices that are required to increase the maturity of these processes*”(p. 1). Andersen and Henriksen (2006) and Siau and Long (2005) believe that maturity models play a significant role in the assessment of organisational efforts towards e-government and in monitoring the activities of a government in this area over the long term. Kim and Grant (2010) suggest that, besides assessing levels of maturity, these models assist in management of relevant processes in order to streamline both the obvious and masked indicators of performance.

In regards to the number of stages or phases in a model, some authors believe that only two stages are necessary for a maturity model, others think that four, five or even six stages are needed due to the levels of integration required for the online delivery of services and the complexity involved in doing so. Nevertheless, some common ground can be found between models. They each start with information dissemination as an initial stage (i.e. immaturity), progress towards a complex transaction stage, and tend to end with a digital democracy stage (i.e. maturity). Despite the multiple existing models, research (Coursey & Norris, 2008) suggests that they are speculative by nature, having been developed without consideration that the level of service provided by different public organisations differs significantly between countries and therefore, country specific assessment indicators are needed to evaluate the maturity of e-government in a particular national context. These indicators are often missing or incomplete in existing maturity models, which in turn affects the assessment of particular e-government websites. Furthermore, local government also expects to benefit from developments in e-government and may have different context and level-specific features from those of central government. For example, local

government agencies are expected to provide a range of services targeted at all ratepayers or residents of a particular locality.

### **1.3 Adoption of e-government**

As public organisations move towards e-government implementation they face legal issues, such as the status of electronic contracts and a legal framework to support digital signatures that does not exist or is at a very primitive level in many countries (Schware & Deane, 2003; Scott, 2006). For example, Dutch and German local governments were not allowed to deliver services through the Internet without legal protocols in place to cover digital signatures (Pieterse, Ebbers, & Van Dijk, 2007). Austria had to pass legislation to effectively address legal issues around the management of e-government (Sonntag & Wimmer, 2003). Further, issues such as large financial investments, higher political risks and a lack of resources for developing, monitoring and managing mediation, are significant barriers to e-government progress (Hahamis, Lies, & Healy, 2005; Ho, 2004; Pieterse et al., 2007; Scott, 2006). Changing government organisation cultures is the toughest variable to manage in e-government since it entails the human element, which is always unpredictable (Akman, Mishra, & Arifoglu, 2005). A lack of the necessary skilled employees, security and privacy concerns, equitable access to e-government services, the possibility of hacking attacks, employee workload, religious beliefs, institutional weakness and technology issues, have all been found to restrict e-government development and adoption (Chiger, 2002; Edmiston, 2003; D. Evans & Yen, 2006; Hahamis et al., 2005; Ho, 2004).

Prior studies have identified several internal factors, including the perceptions of individual managers and bureaucratic and political rigidity, which have hampered efforts to employ Internet applications to facilitate cross-agency collaboration in government (Stanley & Weare, 2004). Moon (2002) found that the administrative branch of local governments tended to be more proactive in the introduction of e-government initiatives than locally elected mayors who tended to be politically motivated. Smaller states and/or countries with minimum levels of government have found an advantage in cross-agency collaboration because it raises the awareness of those involved (Pieterse et al., 2007). For example, Singapore has a flat governmental structure and has been successful in implementing e-government compared to countries with a more multi-layered government structure (of course, other factors may also have influenced Singapore's success). Further, e-government implementation faces increased level of resistance in those countries where corruption is an integral part of the power structure, as e-government enhances transparency in all business

processes, or in non-democratic countries, as e-government can improve democratic participation. In addition, internal pressures from constituencies, coordination between state and local governments, differing levels of adaptability, external pressures such as from neighbouring countries, complex business processes, and demand from business leaders and other government agencies, combine to influence the decision-making process of governments in regards to the adoption of e-government (Borris, 2000; D. Evans & Yen, 2006; Irani, Love et al., 2007; Paris, 2005; Reddick & Frank, 2007). Researchers have also highlighted the impact of a 'digital divide', the gap between who can access Internet technology with relative ease and those who cannot, on e-government adoption. Infrastructure is an issue in e-government development and diffusion that is common to all players, but more especially developing countries or less-developed regions within a country.

Among the technological obstacles to e-government adoption, 'legacy software issues' have been found to be a common barrier for many governments as most legacy information systems are not compatible with the newer systems required for e-government (Pieterse et al., 2007). A competitive telecommunication market and lower connection costs permits e-government to become a viable option for citizens and businesses to interact with government. The International Telecommunication Union (ITU) statistics indicate that around 95% of top-level Internet hosts are located in high-income countries that account for 16% of the world's population and, consequently, the populations of these countries enjoy comparatively low access costs (Schware & Deane, 2003). Obviously, the level of Internet penetration will be low in countries where access cost is very high (Schware & Deane, 2003). For example, the rate of Internet penetration was reported to be minimal in the Arab world as Internet access costs were beyond the purchasing power of the average person (Aladwani, 2003). Other technological barriers that might affect implementation of e-government are the absence of technologies that can integrate diverse databases, the lack of an appropriate architecture, and limited availability or compatibility of software, systems and applications (Irani, Love et al., 2007).

Adoption of e-government requires an integrative architecture framework approach to the placement of information and services online and that, in and of itself, requires radical changes in organisational structures. Various architectures and models have been proposed as part of both completed and ongoing e-government research projects across the world. For example, the ASPA-UN model (Yildiz, 2007), the OSCI platform, the SeCo container, eGOV project, the eMayor project and the WebDG architecture (Dias & Rafael, 2007).

When analysed individually, they fail to address one or more of the following requirements: a client-centred approach, the integration of delivery channels with traditional channels, security and privacy, support from coexisting access points, and flexibility (Dias & Rafael, 2007). Innovation is often considered as an uncertain quantity, prone to risk, random and complex, eschewed in favour of more linear models which fail to capture or allow for organisational complexities. Moreover, linear models may not be appropriate to e-government initiatives in developing countries, as they will restrict the dynamic change essential to effective implementation due to immature technical and non-technical infrastructures (Zarei, Ghapanchi, & Sattary, 2008).

Even if governments develop and implement e-government services, their success in doing so is dependent on individual citizens using these online services. There is a growing body of academic research focused on identifying those factors that influenced whether users adopt and use a technology. These studies have used models and approaches such as the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Planned Behaviour (TPB), (Ajzen, 1991), and Diffusion of Innovations (DOI) (Rogers, 1983) theory. A study comprised of the TAM and DOI models, indicated that a combined model would capture a higher percentage of the user intention than earlier models (Gilbert, Pierre, & Darren, 2004). In all of the discussed models, the one attribute that seemed to influence user adoption was technology that was user friendly (Welch & Pandey, 2006). However, researchers (Damodaran, Nicholls, Henry, Land, & Farbey, 2005) expressed the opinion that more emphasis has been put on technological aspects of delivery rather than on identifying what works best for citizens and engages them in two-way dialogue over decision making and methods of service delivery.

Irani, Elliman and Jackson (2007) recommended that an interdisciplinary, approach that integrates the technological, organisational, social and regulatory aspects of e-government is best suited to understand the needs of potential consumers of e-government services, particularly given the constant organisational, technical and social change associated with this domain. Socio-technical theory (Berg, Aarts, & Van Der, 2003) speculates that any system, such as e-government, consists of technical and social (or organisational) elements. It emphasises that in order to be successful, any such system must entail synchronised configuration of both the social and technical aspects of the system. Socio-technical theory attempts to achieve symbiosis between the technologically oriented and the socially oriented perspectives of technological change in organisations and society. In order to achieve e-government goals, Damodaran et al. (2005) recommended development of a

socio-technical sub-system which means integrating technology, organisational and communication processes to meet the needs of citizens in conjunction with the regulatory and legal requirements of the government.

#### **1.4 Studying local e-government in New Zealand**

New Zealand is a small country with a population of just over 4.4 million people, and operates under a unicameral system of central government meaning there is no state, provincial or federal levels of government. Shah (2006, p. 1) stated that:

*“Local government refers to specific institutions or entities created by national constitutions (Brazil, Denmark, France, India, Italy, Japan, Sweden), by state constitutions (Australia, the United States), by ordinary legislation of a higher level of central government (New Zealand, the United Kingdom, most countries), by provincial or state legislation (Canada, Pakistan), or by executive order (China) to deliver a range of specified services to a relatively small geographically delineated area.”*

The term ‘local government’ is inclusive of municipalities, district councils and city councils – administrative bodies representative of government’s role in geographically defined districts in promoting the social, economic, environmental and cultural well-being of communities. Local government also provides a high number of services and up to 80% of citizen-government transactions take place at the local level (Shackleton, Fisher, & Dawson, 2004). With stronger connections to their communities, local governments, in most countries, function in an environment of more transparency and accountability. The drawbacks, however, may include a lack of independent decision-making power on major issues, and internal and external pressure from communities, citizens, business partners and top-level government (Shackleton et al., 2004).

The predominant trend for implementation of e-government initiatives at the local government level (hereafter referred to as ‘local e-government’) is that it flows from central government to the lowest level of government along a defined hierarchical structure (Edmiston, 2003; Gil-Garcia & Pardo, 2005; West, 2005). Shackleton et al. (2004) advocate the theory that local e-government systems may mature at different rates in response to pressure to perform specific tasks. Studies have found that online delivery of local government services often aims to replace existing over-the-counter services and the degree of integration of these services may differ from those that are implemented at higher levels of governments. For example, e-government in all the cities in UK was found to be an extension of the traditional service delivery system with potential benefits in speed and accessibility 24/7 with few exceptions (Torres, Pina, & Acerete, 2006).

In New Zealand, the focus of local e-government has primarily been at the information provision level and its spread, thus far, is uneven due to inadequate telecommunications infrastructure in the more remote areas and the braking effect of a 'digital divide' based on this. Furthermore, socio-economic and educational pressures intensify the impact of a 'digital divide' in New Zealand. Participation in e-government, particularly for rural areas, usually involves ownership of a computer and access to a reliable broadband Internet connection. Deakins and Dillon (2002) suggested that several changes were required to enhance the New Zealand local e-government experience, including: enhanced accessibility, greater consumer confidence and trust, a skilled workforce, and web-specific regulation. Another relevant social issue is a lack of cultural capital. Some citizens may feel alienated from the processes of e-government as they are unfamiliar with the mechanics of the political system and uneducated on computer and Internet use (Peacey, 2002). Privacy law in New Zealand also needs to be strengthened so that users feel comfortable engaging in government processes (Peacey, 2002). A more recent study on New Zealand local e-government by Deakins, Dillon and Chen (2007) was conducted to establish the level of support around 16 key issues that had previously been identified as critical to the success of e-government initiatives in the USA which include cultural obstacles, the IT work force, social effects, e-tailing, consumer confidence, private sector, trust, Indigenous peoples, digital divide, accessibility, taxation, legislation, efficiency, e-procurement, security and privacy. Their study revealed that accessibility of online government services, security, privacy of citizen information, consumer confidence in performing online transactions, citizen trust in government, and legislation relevant to e-government were highly significant in implementing e-government in New Zealand.

A review of relevant literature reveals many studies on e-government, which have variously considered how the public sector uses the Internet to provide information and services, which e-government services are being most used, what factors influence organisational implementation, and what factors affect citizen participation in e-government. However, none of these studies have focused on what online information and services government actually provides in comparison with what citizens need or expect from their governments, and why governments seem unable to reduce gaps between that expectation and the reality. Further, most of the prior studies have been conducted in countries that have had a successful e-government roll-out, such as the USA, Canada, Singapore and various European countries. These countries are economically, politically, socially and culturally different from New Zealand. Very few independent studies have been conducted on New

Zealand's e-government initiatives and, in particular, the factors affecting local e-government implementation and citizen participation in local e-government.

### **1.5 Objectives of this study**

The overall research question addressed by this study is why New Zealand local government has not achieved the e-government targets set for it in the government's digital strategy. The literature reviewed for this study suggests that any explanation of local e-government development progress and its adoption by citizens requires consideration of both local government and citizen perspectives. In other words, a holistic, multi-perspective approach is needed to gain an understanding of the research problem.

This study has three main objectives. The first is to evaluate the progress of New Zealand local government in implementing e-government information and services for its citizens. The second objective is to identify citizens' expectations of local e-government services and the factors that influence their participation in local e-government. Third, the study also aims to identify factors influencing New Zealand local government objectives and initiatives in setting-up e-government services, evaluate the readiness of local government for the implementation of e-government, and explore what factors have affected local e-government adoption and implementation. Through analysis of these three research strands, the degree to which local e-government initiatives currently meet citizens' expectations will be identified and policy on future e-government development can be explained. In order to achieve above objectives, the current study will address the following research questions in the context of New Zealand:

1. What is the level of e-government maturity at the local government level in New Zealand?
2. What are citizens' expectations of local e-government?
3. What influences citizens' participation in local e-government?
4. What objectives do local government bodies have when setting up e-government initiatives?
5. What are the barriers for local e-government implementation?

### **1.6 Significance of the study**

The intention of this research is to make a number of contributions to the study and practice of e-government in the local government domain. The study empirically examines the maturity of local e-government in New Zealand, drawing on models and constructs that are widely used in the literature. This study also develops a comprehensive socio-

technical model of e-government that can both inform future research on e-government and guide e-government implementation and adoption by local government. The model is used to analyse the technological, organisational, social and environmental factors influencing local e-government implementation. While the findings are grounded in the New Zealand context, they will be of interest to researchers studying local e-government development in other countries. The research will also offer empirical evidence on citizens' expectations of local e-government and provide a better understanding of why people do or do not utilise online channels for delivery of their local government information and services. Assessing e-government adoption and progress from both government and citizen perspectives is relatively rare, and enables the research to focus on identifying any gaps that may exist between local government's provision and citizens' expectations of e-government information and services. Public organisations can promote wider acceptance of e-government by adapting the provision of online services and their underlying processes, and removing barriers that suppress the implementation and adoption of e-government.

### ***1.7 Organisation of the thesis***

This thesis is organised into nine chapters. This chapter (Chapter 1) provides an introduction to e-government, sets out the objectives of this research and describes the structure of the thesis. Chapter 2 describes e-government in more detail, including its definition and benefits, before comparing the strategies and progress of e-government in New Zealand with three other countries. Chapter 3 reviews prior literature on e-government maturity, and e-government adoption from the perspective of both citizens and government agencies. It outlines a maturity model used for analysis of local government websites in New Zealand. This is followed by development of a framework for assessing citizens' and local government adoption of e-government. Chapter 4 presents the methodology for this study, the research design, and the data collection methods and data analysis techniques that are used in the research. Chapter 5 presents the results of the local government website analysis. The results of a web-based survey of citizens' expectations of online information and services accessible through their local government websites and their attitudes to e-government are presented in Chapter 6. Chapter 7 describes the findings of the analysis of a programme of interviews with local government officials throughout New Zealand that was conducted to gain a better understanding of the organisational issues in local e-government implementation. Chapter 8 discusses the results of current study in light of prior research, highlighting those aspects of e-government adoption and implementation that are supported and the reasons behind any contradictory findings.

Finally, Chapter 9 presents the conclusions of the study and specifies its limitations, together with implications and recommendations for further studies.

## **CHAPTER 2      E-GOVERNMENT**

### **2.0      *Introduction***

This chapter will provide important background knowledge on the subject of this research. First, the chapter will review the many definitions and concepts of e-government, each within the context of its use in prior studies, which will form the basis of the definition used in this study. This combined with a review of e-government benefits will set the scope for the study. This is followed by an analysis of e-government implementation strategies and the progress made at the local and national government levels for New Zealand and three other countries: the USA, the UK and Australia. Due to the time and scope of this study the number of comparative countries was limited to three. The UK and USA are strong in e-government development and implementation since inception and the UK, in particular, is used as a point of reference for e-government development in general in New Zealand and Australia shares a number of commonalities. There are several joint authorities linking Australia and New Zealand that work together toward developing information standards. Further, the three countries share a comparable history of implementing information technology, considering it to improve internal efficiency and create seamless citizen-focused services of better quality. These countries had issued successive e-government strategies and had faced several challenges (Gauld, 2006). Finally, there will be a brief discussion of benchmarking studies in order to get an overview of the progress of e-government implementation from a variety of perspectives.

### **2.1      *Definition of e-government***

Many definitions of e-government exist in the relevant literature, but they are rather loose and are highly dependent on the specific context within which they are used. The prefix ‘e’ is representative of the electronic media that encapsulates the delivery of governmental services to constituents. Several researchers have used the term ‘e-government’ as a catch-all term that seems to cover almost all activities of public administration, including online provision of government services and information intended to improve interaction between citizens and government and encouraging citizen participation in determining government policy and processes (Carter & Belanger, 2004; H. J. Kim, Pan, & Pan, 2006; Oakley, 2002; Torres et al., 2006). For example, the World Bank (2006, p.1) defined e-government as, “*the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relationships with citizens, businesses, and other arms of government*”.

Table 2.1 lists some of the definitions from the existing body of literature, highlighting their variety of use and nuances in focus. Some definitions used are technologically focused which helps governments improve information quality and effective communication (Cook, Vigne, Pagano, Dawes, & Pardo, 2002; OECD, 2003; Ronaghan, 2001), improve efficiency and effectiveness (Carter & Belanger, 2004; OECD, 2003), build relationships between all stakeholders (Parent, Vendebeek, & Gemino, 2005), and reduces cost and increases transparency (Irani, Love et al., 2007). Some of the definitions come from a political perspective as e-government offers an opportunity for governments to re-structure, to get closer to their constituents and cooperate with a variety of population sub-groups. Al-Shehri (2008) opined that some of these definitions clearly emphasise a technological viewpoint with respect to the political result, without giving a clear image of this notion. He was of the view that public administrations will primarily see e-government as a foundation for new forms of communication and as a tool for reformation. Chalhoub (2010) expressed that e-government has the potential to be embedded deeply into every level of administration and aid the participation of citizens in an efficient exchange of information and services. Thus, the meaning of ‘e’ could well be extended beyond the advantages mentioned above and transform public organisations, increasing public trust and satisfaction with ‘e’ systems (Gauld, 2006). From a governmental perspective, e-government can be viewed as the transformation of government services in order to enhance administrative efficiency and re-examine of the function of democratic practices and processes (Hahamis et al., 2005; Parent et al., 2005). It is also concerned with creating an environment in which citizen feel like active participants in the growth of their community (Gunter, 2006). From a citizen’s perspective, e-government facilitates public access to government information and services of their choice, anytime and from anywhere (Gichoya, 2005; Pippa Norris, 1999).

Literature	Definition	Focus of e-government
United Nations (2001)	The generic capacity or aptitude of the public sector to use ICT (Information Communications Technology) to encapsulate public services, deploy them to the public, provide high quality information (explicit knowledge) and furnish effective communication tools that support human development	Improved information quality and communication
Cook et al. (2002)	e-Government has four dimensions including; e-service, e-management, e-democracy and e-commerce	Improved information quality, interaction and ability for online transaction and e-democracy
OECD (2003)	Electronic government refers to the use of information and communication technologies, more particularly the Internet, as a tool to achieve better government.	Better governance
Carter and Belanger (2004)	e-Government is the use of information technology, especially telecommunications, to enable and improve the efficiency with which government services and information are provided to citizens, employees, businesses, and government agencies.	Improved efficiency
Parent et al. (2005)	e-Government is a powerful tool for improving the internal efficiency of the government, the quality of service delivery and enhancement of public participation	Improved internal efficiency, quality of service and citizen participation
Claver-Cortés, de Juana-Espinosa, and Tarí (2006)	Refers to the relationships established between public organisations and their stakeholders through Internet technologies.	Relationships with stakeholders
Susanto and Goodwin (2006)	SMS-based e-government involves the utilisation of Short Message Service (SMS) technology, services and applications for improving benefits to all parties involved in e-government including citizens, business, and government institutions.	Improved service and enhanced communication
Torres et al. (2006)	E-governance includes e-government plus the key issues of governance such as online engagement of stakeholders in the process of shaping, debating, and implementing public policies.	Improved information quality, interaction and ability for online transaction and e-democracy
Irani, Elliman and Jackson (2007)	e-Government is the term for the technology-enabled transformation of governments: for a reduction of costs, for increased transparency, and for improvement of service delivery and public administration	Cost saving, enhanced transparency, improved service delivery and administration.
Riad, El-Barky and El-Adl (2010)	e-Government includes those government activities that take place over electronic communications at all levels of government, citizens, and businesses, to deliver products and services such as; placing and receiving orders; providing and obtaining information; and completing financial transactions.	Improved information quality, interaction and ability for online transaction
Almarabeh and AbuAli (2010)	E- government as a governments use of ICT to offer citizens and businesses the opportunity to interact and conduct business with government by using different electronic media such as telephone touch pad, fax, smart cards, self-service kiosks, e-mail, Internet, and EDI.	Improved service and enhanced communication

Table 2.1: e-Government definitions

Further, those terms most commonly used in the academic literature to describe the range of activities that public officials undertake e.g. ‘public administration’ and ‘public management’ are sometimes used interchangeably or distinctly (Lynn Jr, 2006). Several terms used for defining e-government either do not have definitions or have been defined inappropriately. For example, while the term *transformation* is frequently used in a single definition, O’Neill (2009) found two meanings: (1) the change in way government carries out activities; and (2) a change in nature of relations between government and citizens. West (2004) defined *transformation* as a means of improving efficiency. Another factor is whether electronic service delivery channels other than the Internet are included in the definition or for different segments of users. For example, Susanto and Goodwin’s (2006) SMS-based e-government is proposed as an alternative to Internet-based channels,

particularly for developing countries, where the infrastructure and skills required for Internet-based e-government are limited. In short, there is no one definition of e-government that has global acceptance from the different perspectives of the experts proposing them. Nevertheless, while definitions of e-government are derived from different perspectives, there are similarities between their expected outcomes. Better delivery of services through the utilisation of the technology for both citizens and businesses is a common theme in most of these definitions.

Citizen participation in e-government is referred to in some literature as 'digital democracy' or 'e-democracy' (Yildiz, 2007) and described as a the practice of democracy through the forum of the Internet as an alternate channel where the limitations of time, space do not have the same impact (Lourenco & Costa, 2006). Netchaeva (2002) was of the opinion that there cannot be any e-democracy, as the practice of democracy in real time requires all individuals to participate in all aspects of political, social and economic life. Several commentators have treated e-government and e-democracy as being the same, while Damodaran et al. (2005) and Clift (2004) saw e-government as a subsystem of e-democracy. Some researchers point out that although there are obvious linkages between e-government and e-democracy, the two vary in ideals and aims. Still another group of researchers have coined a new term 'e-governance' to combine e-government with the key issues of governance such as: online engagement of stakeholders in the process of shaping, debating, and implementing public policies, which appear to be the hallmarks of e-democracy (Backus, 2001).

Brown and Brudney (2001) categorised e-government initiatives into three broad categories: 1) government-to-government (G2G) initiatives make online databases available for inter-government agency cooperation and communication, improving operational efficacy and effectiveness through the internal exchange of information and commodities; 2) government-to-citizen (G2C) initiatives provide services to citizens, e.g. employment services, university admissions, residency permits; and 3) government-to-business (G2B) initiatives involve online transactions with business, such as e-procurement, commercial registration, work permits and licenses. To this list, Yildiz (2007) added a further two categories: government-to-community based organisations (G2CS) initiatives that streamline communications and co-ordination in disaster relief, and citizen-to-citizen (C2C) initiatives that involve interaction among citizens themselves, e.g. electronic discussion groups on civic issues.

Rao (2011) added government-to-employee (G2E) initiatives, which empower state employees in assisting citizens to make the optimal use of improved services, thereby, speeding-up administrative processes, and augmenting governmental solutions.

## **2.2 Defining e-government in the New Zealand context**

In New Zealand, the term e-government is used to encompass a wide range of activities as below:

*“e-Government is a way for governments to use the new technologies to provide people with more convenient access information and services, to improve the quality of the services and to provide greater opportunities to participate in our democratic institutions and processes.”* (O'Neill, 2009)

This definition of the term e-government in a New Zealand context is in line with that made by other authorities. It highlights three common expectations of e-government: better access to government information and services, improved service quality and greater participation in democratic government. Activities that contribute to these outcomes include, but are not necessarily restricted to; information management, service delivery, and public participation in policy and decision-making processes. The definition implies the inclusion of administrative processes and internal procedures that will contribute to achieving improvement in the quality of operational performance for government agencies.

The above definition is noticeably goal or outcome oriented. For this study, e-government has been defined in more operational terms as: ‘the delivery of government information and services to citizens, business and other organisations, together with the encouragement of citizen participation in democratic processes, using the Internet as the principal conduit’. While this definition can be applied to all levels of government, including regional, national and central government, the focus in this research is on local government.

## **2.3 Benefits of e-government**

The role of e-government is not only to offer services electronically, but also to ensure services are secure, available online, meet citizen requirements, are easy to use and are seamlessly integrated with back-end systems. According to a number of researchers (Foley, 2008; Ndou, 2004; Parent et al., 2005), e-government has the potential to be a powerful tool for administrations to improve the quality of their service delivery and encourage public participation in government (Parent et al., 2005). Table 2.1 above shows the focus of various e-government definitions and although some are quite specific, this is not a given. In order to better understand e-government objectives and benefits, a review of the

relevant literature was carried out. The review reveals that for most countries there is common ground in projected outcomes. According to the literature reviewed for this study, (Fenwick, John, & Stimac, 2009; Ndou, 2004) the main benefits of e-government are as follows.

*Enhancement of information access.* The process of information accumulation for citizens and businesses is greatly simplified by e-government. As the result of this heightened public access to a higher volume of detailed information, the activities of government in some jurisdictions are more transparent than in the past. That is, more detailed information is available in the public arena. For example, in New Zealand, all local and central government agencies have websites containing a wide range of information on policies and services.

*Support, flexibility and convenience.* With e-government, citizens and other stakeholders are able to access government information and services at any time and from any location.

*Elimination of intermediaries.* Successful implementation of e-government initiatives has the potential to eliminate the unnecessary cost, in both time and money, of intermediaries or 'middle-men'.

*Enhancement of relationship with, and empowerment of, the public.* Successful implementation of e-government, it is hoped, will improve direct contact between government and citizens and businesses, on the one hand, and with other government institutions, on the other hand. Another projected outcome is the enhancement of service delivery systems and empowerment of citizens through improved access to data. It will also allow government agencies to focus on providing better service for their customers, which in turn will build citizens' trust and satisfaction.

*Improvement of transparency and inhibiting the potential for corruption.* Since with e-government, information regarding every aspect of government is more easily available to the public, it is hoped that government agencies will develop a heightened sense of responsibility as they will be aware that their activities will be in the public arena, open to scrutiny and accountability.

*Enhancement of participation in government.* With e-government, citizens will be able to more easily and directly participate in government planning, policy formulation and decision making, through a range of online discussion and submission processes.

*Reduction in costs and time.* Implementation of online services will considerably decrease the processing costs of many activities. For instance, processing a paper tax form costs the USA Inland Revenue Service four times the cost of processing an electronic form (Al-Kibsi, Boer, Mourshed, & Rea, 2001). It also reduces the processing resources required.

For example, in New Zealand, a tax payment can be made online directly to the Inland Revenue Department's account thus saving the agency processing time and administrative resources. The effective implementation of ICT may probably minimise or diminish underlying inefficiencies in processes by permitting file and data sharing across government entities, decreasing the required time for transactions and eliminating time to visit to government offices.

*Reduction in bureaucracy.* As e-government becomes increasingly adopted, governments may be motivated to change from a hierarchical public management model to a flexible and less centralised model.

*Diminishment of organisational boundaries.* e-Government enables the public to interact with government in a way that makes agency boundaries at once redundant, transparent and integrated, with cross agency data more readily available.

The benefits outlined above clearly indicate that e-government has elements relevant to both government and citizens with widespread implications, if realised and adopted as intended. However, many of these benefits assume full implementation of e-government. Gauld (2006) has indicated that no country is near to fulfilling those expectations. Other researchers (Chadwick, 2006; OECD, 2003) have pointed out that in different countries different approaches are adopted as to what constitutes better government and how, where, and when it should be implemented. Further, meeting these expectations hinges on the preferences and priorities of politicians and the citizens, as well as a variety of other factors. A series of questions thus remain, relating to how changes in information exchange and communications should be interpreted in the public sector; how technical innovations are being managed by public officials to effect operational change; and to what extent these changes are having, or are likely to have, a consequential impact on the government initiatives. Chadwick (2006) noted that e-government in the USA and the UK has been narrowly defined as a programme of managerial administrative reform rather than "*a means of revitalising democracy and citizenship*" (p. 185). Successful implementations of e-government however, cannot assure the expected benefits will be realised if adoption levels are poor. Researchers in both Australia and New Zealand have found that politicians have been slow to adopt interactive and Internet-based communication mediums because they are fully engaged with more traditional, existing modes of interaction with constituents (Ward, Lusoli, & Gibson, 2007).

## **2.4 International review of e-government development**

The United Nations (2004) e-government survey reveals that e-government initiatives are taking place at all levels of government around the world and that most member countries have an online presence. The strategic agendas of e-government vary because each vision is driven by a country's unique requirements and various social, political, and economic factors. The achievement or the progress of e-government initiatives also differs from country to country because they are developed and executed within specific national contexts (Grant & Chau, 2005). In the following sections, the e-government strategies and policies of New Zealand and three other countries is outlined, together with the progress towards e-government made at both national and local government levels. This will enable a comparison of how New Zealand has developed and performed in the e-government space relative to its closest developed neighbour, Australia, and two of the leading e-government democracies, the UK and the USA.

### **2.4.1 Australia**

#### **2.4.1.1 National e-government strategy**

The Australian federal government was one of the first to set explicit targets, in 1997, to deliver all essential government services electronically by 2001 (P. Chen, Gibson, & Ward, 2007). This e-government strategy was updated in 2002, reinforcing the desire for secure, trustworthy, comprehensive and integrated use of new technologies for the delivery of government information and services online (NOIE, 2002). In 2004, the Australian federal government released its e-government strategy intended to enhance productivity, collaboration and accessibility through the effective use of information, knowledge and ICT. The e-government initiatives focused on four main areas: meeting citizens' needs; establishing connected service delivery; achieving value for money; and enhancing public sector capability.

The Australian Government Information Management Office (AGIMO) launched a new citizen-focused strategy in 2006 to guide future development in a more coordinated way. By 2010, The number of paper forms that must be filled in would be cut and the numerous static forms changed into dynamic forms (AGIMO, 2006). This was followed by the Australian public service information and communications technology strategy released in 2012 (AGIMO, 2012), which included their e-government strategy. This strategy is timetabled from 2012 through to 2015 and sets in place direction and action for future implementation of ICT, efficient delivery of government services and enhancement of

productivity. Table 2.2 shows the strategic actions to be taken for implementation of the 2012-2015 strategy.

Date	Strategic action
By 2015	Agencies share and reuse common business processes, patterns and standards, increasing the consistency of services
	People are able to personalise government online services to reduce the time and effort of dealing with government
	Standard approaches are identified to reduce the cost of back-office functions.
	Internal barriers to agencies using ICT for innovation have been removed, resulting in more ideas to improve services.
	Government location-based information provides people and business with more targeted services specific to their needs
	The Australian Public Service regularly engages with industry to improve the viability of ICT-enabled projects.

**Table 2.2: Australian e-government strategy implementation plan**  
(AGIMO, 2012)

#### **2.4.1.2 National e-government progress**

As early as 1999, Australia was recognised by e-government survey organisations as a leader in e-government (Clift, 2002), with some of states internationally recognised as particularly innovative (P. Bishop & Andersen, 2004). Australia fell from its pioneering role after 1999, but remained near the top of consultancy rankings throughout the first half of the 2000s. The results of a survey in January 2002 confirmed that 60% per cent of the total services provided by Australian government agencies were available online (NOIE, 2002). In February 2002, the national portal, [australia.gov.au](http://australia.gov.au), a new single entry point to the Commonwealth government information and services, was launched, linking to a number of similar portal websites. Another survey found that 48% of Australian adults accessed government services online in 2006, compared with 39% in 2005, 21% in 2002 and 16% in 2001 (AGIMO, 2006), while an Accenture (2005) report showed that 44% of Australians used the Internet to communicate with their government. A report from AGIMO (2007) revealed that citizens had low expectations of what can be achieved online. The report highlighted that traditional channels, such as face-to-face contact and the telephone were still preferred for transactions, which were considered more complex. Following these findings, the Australian government reviewed and consolidated its websites and a more streamlined government online presence was promoted.

#### **2.4.1.3 Local e-government strategy**

Australian local governments are constitutionally defined under the authority of each state government and they act largely autonomously (Dollery, Burns, & Johnson, 2005; Shackleton et al., 2006). In their role as a local layer of government, activities are typically narrower than in other countries and can include areas such as planning, building, road

maintenance and sewers, parks and public facilities. However, local government activities can vary widely between states, and are regulated by both federal and state government authorities. The Northern Territory local government alone is unique in that it has no town planning responsibilities. Local government is responsible for water and drainage in only three of the six states. While in the past, local e-government strategy was overlooked in national e-government strategies (an assumption was made that local government would follow the lead of the state and commonwealth), the commonwealth and state governments have realised that truly integrated e-government services cannot be achieved without the support of local government (NOIE, 2002). As a result there has been a growing interest in the role of local government, which has expanded to encompass additional areas such as governance, advocacy, service delivery, planning and community development, social and community welfare, economic development and environmental management in some cases (DOTARS, 2005; Lips, 2001). Lately, it has been observed that local governments are becoming more political and influential as they adapt policies from higher levels of government to match their community's needs (Shackleton et al., 2006).

#### ***2.4.1.4 Local e-government progress***

Despite a lack of independence and limited revenue, Australian local government provides an array of functions and services and is becoming increasingly important in the grassroots implementation of policy and service provision (Industry Commission, 1997). A report on e-government revealed that in 2004, most councils across Australia were offering very few online services. Only 15% of councils facilitated online completion of almost all of their transactional services. While having strong links to the community is a central tenet of local government (Shackleton, Fisher, & Dawson, 2005), about 59% of councils were not actively promoting citizens online participation and marketed their e-government services poorly. Stanton (2007) reported that a lack of investment and a dearth of strategic vision on the part of councillors (about 60%) impacted negatively on e-government developments. Although digital technology was suggested as the single most important opportunity to increase productivity, in 2004 38% of councils had no mention of digital/Internet-based technology goals or strategies (Chimonyo, O'Loughlin, Chen, & Barlow, 2004). The main factors identified by the OECD (2003) as impacting on electronic service delivery and citizen engagement in the local government sector included: legislative and regulatory barriers, budgetary barriers, technological change, and the digital divide. In recent years, the availability of external funds and other forms of expertise has assisted Australian councils to improve e-government services in varying degrees.

## **2.4.2 United Kingdom**

### ***2.4.2.1 National e-government strategy***

The UK's e-government strategy was announced in 2000. The aim of this strategy was provision of all appropriate services online by 2005. The strategy outlined the following initiatives (Cabinet Office, 2000):

1. Building online services based on citizen need and perspectives
2. Making government information and services more accessible to citizen
3. Fostering social inclusion
4. Allowing to government websites using a variety of electronic devices (Satyanarayan, 2004)
5. Governmental migration to a shared services culture
6. Raising levels of professionalism on the part of those delivering the online services, i.e. the government.

This strategy envisaged the provision of services not only through the Internet but also through telecommunication platforms, toll free calling located in common service centres and self-service kiosks located in public places. Common services centres were intended to cater to those sections of society uncomfortable with digital media, while self-service kiosks are likely to be useful to people who cannot afford computers or the Internet at home, as well as to visitors to the country. The short-term focus of the strategy was on connectivity, while in the medium term it concentrated on prioritisation of services available to its citizens. In the long-term, it was expected that government would evolve through the increased use of technology and adapt to innovation with a minimal of disruption to services.

In 2009, an interim report was commissioned and published by the government that contains more than 20 recommendations aimed at positioning the UK at the forefront of those countries who have taken similar e-government initiatives and at reducing expenditure on essential services delivery. In the same year, the British Prime Minister announced the publication of an action plan for the earlier recommendations. In October 2011, the British Minister for the Cabinet Office launched a revised digital strategy aimed at tackling the effect of the digital divide demonstrated by low uptake of e-government services by citizens. The document laid down a number of goals, including making the UK a world leader in digital excellence; constructing a robust strategy to achieve the digital vision; improving participation; and bridging the digital divide (European-Commission,

2011). The strategy also projected delivery of around £1.4bn of savings within 4 years which could be re-invested in development (European Commission, 2011).

#### **2.4.2.2 National e-government progress**

Gauld (2006) reported that about 75% of UK citizens had never visited a government website till 2004. A 2009 survey found that 30% of UK citizens had accessed information on public authorities' websites, and just over half of that number had filled in information electronically (Eurostat, 2012). Brown (2004) argued that future e-government development in UK could adversely impact the public service sector with an estimated loss of 84,000 civil service positions as they would simply be redundant in the new system.. A single point access to all online public services portal, *Directgov*, was launched in 2006 and also started offering services via mobile phones.

In 2007, the Cabinet Office announced that the number of central government websites would be reduced, consolidated and consumers re-directed to the *Directgov* and *businesslink.gov.uk* (European-Commission, 2011). In 2010, the Office of Government Commerce launched a web portal, *data.gov.uk*, to offer free access to non-personal data and introduced *Your Freedom*, a website for citizens to suggest ways of cutting red tape for businesses, by repealing unnecessary laws and supporting civil liberties. According to a recent report, it was understood that the British government was in the process of consolidating over 400 government websites into a single portal in order to offer more features for users and reducing the need for separate departmental websites (European-Commission, 2011).

#### **2.4.2.3 Local e-government strategy**

Torres (2004) studied the websites of UK local governments and found that in almost all the cities e-government reflected the structure of the local body and that the transition to e-government seemed to be following a predictable development process albeit with different speed of progress between cities. In 2002, the Office of the Deputy Prime Minister launched a local e-government strategy that had three objectives: improving public service delivery, improving access to public services, and increasing the efficiency of public service delivery. The strategy outlined 14 priority services, which were expected to be capable of delivery by every council electronically by December 2005. This particular strategy was aimed at reducing inefficiency, replication of systems and duplication of effort (HM Government, 2010). In order to measure council performance, the outcome of each

priority service was also defined. The list of priority services and outcomes are shown in Table 2.3:

Priority areas	Outcomes
1. <b>Schools:</b> To allow processing of student support services online.	Online schools admissions service and educational attainment
2. <b>Community information:</b> To deliver integrated information about services for the community	Enhanced customer satisfaction and promoting healthier community
3. <b>e-democracy:</b> To promote greater online public participation in local decision making	Enhanced customer participation in council plans and policies
4. <b>Local environment:</b> Transforming local environment	Planning, and regulatory services implemented online
5. <b>Online procurement:</b> To allow online procurement	Online procurement from all council suppliers
6. <b>Online payment:</b> To provide online transactional capability for all council payments	Provision for making credit or debit card payments, payment through SMS text message
7. <b>Library, sports and leisure:</b> To provide online access to local library, sports and leisure services.	Online services of library, sports and leisure services online.
8. <b>Transport:</b> To provide real time local transport and traffic information	Enhanced for customer satisfaction and efficiency savings.
9. <b>Benefits:</b> To provide online Housing and Council Tax benefit claim processing	Online claim submission and settlement
10. <b>Support for vulnerable people:</b> To meet the needs of vulnerable children and adults and their carers by increasing the accessibility of online service	Improved customer satisfaction, including increased numbers of users/carers
11. <b>Supporting new ways of working:</b> To enable council staff to work from home or away from the office base.	Increased productivity
12. <b>Accessibility of services:</b> To facilitate council services are supported outside of standard working hours via the Internet or telephone contact centres.	Improved accessibility of services and information
13. <b>Transactional services:</b> To implement more transactional services online.	Increased number of online transactional services
14. <b>Easier for citizens for doing business with council:</b> To ensure effective customer relationship management.	Enhanced customer relationship management and workflow technology

Table 2.3: UK e-government priorities and expected outcomes  
(HM Government, 2010)

The Society of Information Technology Managers (SOCITM) (2011) report proposed three initiatives for local councils that would improve their performance over digital media: *Think customer* – customer service should be seen as the primary goal; *Focus on top-level tasks* – top-level tasks should have priority access to resources; *Go mobile* – citizens should be able to access online services using any mobile device.

#### 2.4.2.4 Local e-government progress

A progress report on local e-government implementation published by the National Audit Office in 2004, revealed that of the 40% of local authorities that had provided a list of planning applications, less than 10% of those had flexible search facilities, and less than 2% allowed the submission of planning applications online. Most of local government e-service provision was in the form of static information, often focusing on internally-orientated organisational matters instead of having a customer focus (Flexibility, 2004). In 2005, the Society of Information Technology Managers undertook a survey of local e-government and reported that only 5% of councils had transactional sites, only 38% of councils had

self-service facilities and only 45% of councils had the desired content and interactive capabilities. The report also anticipated that, for smaller councils, achieving the target of providing 100% of essential services by the end of 2005 would be unrealistic (SOCITM, 2005). In March 2005, the British government launched *Government Connect*, a service aimed at helping local authorities to improve efficiencies in service delivery and reduction of operational costs by the end of 2007 (European-Commission, 2011). Prachett, Wingfield and Polat (2006) indicate that in England and Wales several local government web sites failed to meet the basic level of expectations due to a lack of funding and available human resources. More recently, Brooks and Agyekum-Ofosu (2010) found that although local authorities had been addressing transparency and transactional issues for their websites, very little had been done about interactivity, and this might be due to a number of reasons. It is speculated that in some instances, local governments were using technology for their own organisational benefits instead of meeting the needs of the public. For example, the researchers found a local authority had established a one-stop-shop centre for making their internal work easier to manage but was not using that same technology to engage the public in online discussion.

SOCITM (2010) reported that the progress of e-government was extremely slow. Most council's websites were not providing the desired self-service capabilities. More than 50% of councils' answer-phone messages still failed to refer callers to their websites. Nevertheless, the results for the 2011 survey (SOCITM, 2011) showed some progress in the use of e-government services, enabling councils to reduce their costs by shifting more enquiries to the online channel. However, 1500 government websites were closed in 2011 following a recommendation by Martha Lane Fox, the UK's 'Digital Champion'. She found the multiplicity of websites, each designed differently, was confusing for the public and resulted in significant duplication of information (European Commission, 2011). The results of a SOCITM (2012) survey showed that radical change was needed for many councils, specifically in the way websites were governed and managed.

### **2.4.3 The United States of America**

#### ***2.4.3.1 National e-government strategy***

The e-government initiatives of the USA was established through the e-government Act of 2002, and its e-government strategy was guided by citizen-centred, result-oriented and market-based principles that focused on reducing bureaucracy, producing measurable results and promoting innovation (Satyanarayan, 2004). The USA strategy envisaged the

development of a technological framework that would provide the integration of government services and information. The strategy outlined 24 program initiatives that focused on citizen needs and perspectives, improvement of internal efficiency, rapid deployment and possible reduction of operating expenditure by limiting redundant spending and excessive paperwork. Furthermore, these initiatives were intended to provide faster public service to citizens within a framework of minutes or hours, as opposed to days or weeks.

The most recent digital strategy, launched in May 2012, is intended to accomplish three things: provide access to high-quality government information and services anywhere, anytime, on any device; (ensure that governments procure and manage devices, applications, and data in smart, secure and affordable ways; and ensure that governments leverage data and improve the quality of their services to citizens. The strategy highlights the potential and challenges governments face in an environment where cloud computing, smarter mobile devices, and collaboration tools are changing the consumer landscape. Popular demand is pushing every level of government to embrace these opportunities and build a 21st century platform to better serve the people (The Administration, 2012). This strategy incorporates input from government practitioners and public and private sector experts. It includes several initiatives, including: 1) delivery of efficient, effective and accountable government; 2) streamlining service delivery and improving customer service; and 3) transparent and open government with trusted identities over the Internet and ultimately provision of a platform to fundamentally shift how government connects with, and provides services to, consumers.

#### ***2.4.3.2 National e-government progress***

From 1998, e-government initiatives became more service-oriented and focused on developing 'virtual agencies' that would bring together disparate services, as well as inter-agency e-government initiatives. The e-government developments intensified after the passing of the e-government Act in 2002 (Gauld, 2006). A survey of Chief Information Officers (CIOs) in all 50 state and 38 federal agencies found that 86% of CIOs believed that e-government had improved their service delivery, 83% perceived that e-government had made their organisation more efficient, and 64% believed that costs had been reduced (West, 2000). An Accenture (2005) report indicated that 3.4 million USA taxpayers filed their taxes online in 2003, 350,000 businesses tax forms were filed online, and there were more than 65 million visits to the job website (USAJobs.com) where job seekers had created over 600,000 resumes online. Using a detailed analysis of 1537 state and federal

government websites in 2008, West (2008) reported that 89% of state and federal websites had services that were fully interactive online and about 3% of government websites were accessible through personal digital assistants, pagers or mobile phones. In regard to data security and privacy policies, 73% of government websites had some form of privacy policy statement while 58% of websites actually fully published their security policy. Further, about 40% of government websites offered some type of foreign language translation, 64% of government websites were written at the 12th-grade reading level or higher and 25% of websites had the capabilities for people with disabilities to access. West commented that although considerable progress had been made, e-government development had fallen short of its potential to transform public section operation and made suggestions on how governments could improve its performance. Dawes (2008) opined that despite a strategic focus and practical initiatives, citizen engagement still received much less attention, in practice, than services or management concerns.

#### 2.4.3.3 Local e-government strategy

The categories of local government in the USA include: 1) county government; 2) town or city government; 3) municipal government; and 4) special-purpose local government. All four categories are covered in the next two sections. The International City/County Management Association (ICMA), in 2002, developed e-government strategies for town, municipal and county government, which had four major aspects: (1) establishment of a secure, online service delivery channel; (2) application of e-commerce to transactional activities; and (3) digital democracy to encourage citizen participation in rule making and accountability (ICMA, 2002). Although every county and city government has their own e-government strategy, a selection of them were reviewed and are shown in Table 2.4.

Local authority and the state	Authority type	Strategy and objective
Virginia Beach, Virginia (Brown & Schelin, 2005)	City government	<b>Availability</b> of online information and services all the time
		<b>One-stop shopping:</b> Access to other government services
		<b>Interactive:</b> A two-way communication between citizen and government and ability for citizen to participate in government's plans and policies decisions.
Conyers, Georgia (Brown & Schelin, 2005)	Town government	<b>Paperless government:</b> Provide government information and services online
		<b>Participation:</b> Encourage citizen to participate in government's plans and decisions.
Seattle, Washington (Blood, 2004)	City government	<b>Improve communication</b> between citizens and government
		<b>Availability</b> of all services online
		<b>Actively</b> respond to citizen and business demands
Fairfax County, Virginia (Brown & Schelin, 2005)	County government	A multi-faceted strategy with a single goal: to provide information and services to County residents, businesses, civic groups and other interested parties.
New York City, New York (Bloomberg & Steel, 2012)	City government	The digital include use of innovative technology, presence of a strong social media, improvement in infrastructure and investments in education

Table 2.4: USA local e-government strategy

#### **2.4.3.4 Local e-government progress**

e-Government service at the local level in the USA is highly variable and, as might be expected, is less developed than at state and federal levels. A study of 1,873 city government websites in the largest metropolitan areas found that 60% of these cities did not offer any online services (West, 2004), which was similar to the earlier findings (Kaylor, Deshazo, & Van Eck, 2001). A survey of the websites of the 100 largest USA metropolitan areas found that although their websites provided a great deal of diverse information for their constituents, very few facilitated online dialogue or consultation – apparently the result of a lack of policies and procedures to support online public involvement (Scott, 2006). With the exception of a few popular online services such as the e-filing of tax returns and renewal of various licenses, advanced online transactions were the exceptions rather than the rule (Y. C. Chen & Thurmaier, 2008).

According to West (2008), 88% of websites provided email addresses for communicating with public officials as of 2007. Other methods that government websites employed to facilitate democratic dialogue included bulletin boards, message boards, blogs, surveys and chat rooms. Some researchers (Edmiston, 2003; Kaylor et al., 2001; D. F. Norris & Moon, 2005) have suggested that the bureaucratic reform promised with the advent of e-government at the local level had fallen short due to a lack of finance and a shortage of IT expertise. Not surprisingly, Carrizales (2008) found that those municipalities with advanced forms of e-government were more likely to have allocated a greater percentage of their overall budget to IT functions. Huang (2006) found that the adoption of e-services was positively correlated with population size and growth, racial diversity, income, employment opportunities, and education levels. The e-government progress report of New York City indicated that the city had realised 75% of citizen engagement, access, open government, and industry goals stated in its digital strategy and progress towards achieving the remaining goals was underway. The City government was engaging more than two million people every month through social media and mobile applications (Bloomberg & Steel, 2012).

At the other end of the population size spectrum, in a study of 428 local governments with a population less than 5000, researchers found that only a few were heavily invested in providing e-government services and engaging citizens (Cassell & Mullaly, 2012). About 33% of those local bodies investigated did not even have a website. The researchers concluded that e-government is still some distance from realising its full potential even after many years of e-government initiatives. This was similar to West's (2004) earlier

comment. That study found that only education had an impact on government's decision to develop a website. More recent research indicates that although e-government provides innovative ways by which governments could communicate with and serve citizens and businesses, neither policy makers nor citizens should take the development of government websites for granted. It concluded that the growth in e-government is neither uniform nor a given (Cassell & Mullaly, 2012).

## **2.4.4 New Zealand**

### ***2.4.4.1 National e-government strategy***

From the outset, New Zealand's government wanted to be a world leader in design and implementation of an e-government system that would promote New Zealand's interests internationally (SSC, 1999). Emphasis was placed on a user-centric portal that would connect most, if not all, administrative bodies throughout the country (SSC, 2000). New Zealand's first e-government strategy was released in April 2001, emphasising a focus on citizen access to government information and services, the ability to complete transactions online, communication with citizens' elected representatives that was cheap, quick and efficient (Deakins & Dillon, 2002; Verton, 2000), and an active role for citizens in policy development/delivery. The strategy listed a series of policy development and infrastructure milestones initially mooted for completion by June 2004. These involved establishing a Secure Electronic Environment (SEE) to enable safe information exchange; a 'metadata' framework to ensure standard information cataloguing that facilitated straightforward public access; a web portal strategy and standards; an interoperability framework that would allow public organisations ease of data exchange; and a National Information Infrastructure Protection Strategy (NIIPS) to provide data security. In December 2001 the strategy was updated, with a number of issues identified as needing extra attention, including governance, funding and measuring e-government effectiveness. Around this time the State Services Commission set milestones to be achieved by all levels of government in the coming years (SSC, 2001). In 2004, New Zealand's government set digital strategy targets to 2010, which were further updated in 2009 with those targets pushed out to 2020 (SSC, 2009), as shown below:

- By 2010, government agencies and their partners will be providing citizen-centric information and services and will have achieved joint outcomes.

- By 2020, citizens' interaction with their government will have evolved, as increasing and innovative use is made of the opportunities offered by developing technologies.

Each of these targets is further broken down into a broad range of aspects that range from technical infrastructure, data security and standards, to strategy and e-participation initiatives. Although the precedence each of these initiatives take is left to the discretion of individual agency, progress needs to be made across all work streams for the desired evolution to be achieved by 2020 (SSC, 2006).

#### **2.4.4.2 National e-government progress**

A government e-procurement system (GoProcure) was initiated in 2002, and was aimed at improving the efficiency of government purchasing through enhanced collaboration between government agencies (SSC, 2003), although it ultimately failed to progress beyond the pilot stage. In order to move forward in e-government initiatives, many public sector agencies have continued to upgrade their own online service, including the Inland Revenue Department, Land Information New Zealand, Parliamentary Counsel Office, Department of Conservation, and the New Zealand Immigration Service. A review of e-government progress was carried in 2003, which listed the development of basic standards for e-government, and an increasing range of online services accessible via the government portal ([www.govt.nz](http://www.govt.nz)). It also recorded several challenges to the initiatives, including trust in e-government, governance, funding and data quality. In the same year, the New Zealand e-government inter-operability framework (NZ e-GIF) was launched with the assurance of three major benefits: it would help government agencies to work together easily; it would allow systems, knowledge, and experience to be shared between these agencies; and it would reduce the effort required when dealing with online government. In June 2004, people could use e-government to access information from 307 separate agencies, 1541 services, and 2774 documents (SSC, 2004). In 2007, an e-government web standard was published and a shared government network and logon service was established (SSC, 2007). The State Services Commission published an e-government interoperability framework in 2008 (SSC, 2008). A survey of residents and ratepayers in 2008 found that 47% of users access information about government – both at a national and local level; 33% obtain information on government policy online; 15% look for information about politics; 21% pay transactions online; and 13% know about the government digital strategy (Bell, Crothers, Kripalani, Sherman, & Smith, 2008). It was also predicted that by 2010, New Zealand government would be transformed through its use of the Internet (SSC, 2007),

services would become more proactive and government agencies would be able to push services out to their citizens (Deakins et al., 2007).

#### **2.4.4.3 Local e-government strategy**

A local e-government strategy was developed within the context of the central strategy and was published in 2003 by a consortium of local government organisations, including Local Government New Zealand, the Society of Local Government Managers, the Association of Local Government Information Management, and Local Government On-line (LGNZ, 2003). The main focus was meshing with central e-government services to provide an integrated and seamless service using the same standards for accessibility, authentication and, privacy and security. The strategy had four key themes: *“providing easy on-line access to information and services, developing innovative products and services, enhancing our people’s participation in local democracy and providing community leadership on e-business initiatives”* (LGNZ, 2003, p. 3). The strategy took a wider view to include support for rural business by providing higher bandwidth, community access to computing power and setting standards for public access to council information and services. The strategy also focused on a collective approach, across all agencies, to the provision of online services, the improvement of relationships between people and local bodies, and enhancing people’s ability to operate effectively in the Information Age. In 2005, the government launched a digital strategy, with an agenda to use ICT to bring together governments and communities and becoming a world leader in using information and technology to realise its economic, social, environmental and cultural goals, to the benefit its people and improving business and government productivity (MED, 2005).

#### **2.4.4.4 Local e-government progress**

Researchers found that (Cullen, O'Connor, & Verrit, 2003) less than 50% of the users of e-government services were able to find the required information from the government websites. The information posted on government websites was often found to be out of date and users’ expectations of privacy and security were low. In 2004, a review of all council websites was performed to evaluate their level of sophistication (Gunston, 2004). The major findings from that study were: 1) all but 1 council had a website; 2) 28% of websites had online forms to give feedback to councils or to submit on an issue or plan; 3) 85% of websites had downloadable forms; 4) only 25% of councils had contact details and office opening hours; 5) only 2 out of 86 councils provided an interactive discussion forum; and 6) 90% of councils provided access to agendas of council meeting. Gunston noticed that there was little evidence of a standard approach to website design, content and

navigation, and that there was no correlation between the size of a council's population and its website features. Cullen and Herson (2004) discovered out-dated information, information overload, bureaucratic language, navigation problems, a lack of user friendliness, and individual rather than collective agency information via a central portal. A longitudinal study in 2006 found that some councils published details of their responsibilities, provided a search engine and downloadable documents and forms, while other councils published a schedule of local events, aerial photos and offered virtual tours (S. Dillon, Deakins, & Chen, 2006). The researchers predicted that electronic voting would take a long time to become a viable reality.

Griffin (2006) suggested that it was unlikely that local government in New Zealand would meet the 2010 aim of total transformation. He suggested that a greater awareness of e-government was required and that government should encourage citizens to use services as they were developed. Other factors restricting the delivery of e-government services included limited broadband coverage – especially to rural areas, a lack of a local government digital strategy and vision, and a lack of technical resources. Although digital government was seen as important, few local government bodies had formal strategies to build e-government services.

A study focusing on benchmarking local e-government initiatives was conducted in 2007-2008 by the State Services Commission, Local Government New Zealand, Association of Local Government Information Management and Local Government Online (LGNZ, 2008), revealed that 29% of councils perceived broadband coverage was poor in their region. Almost all council provide access to the Internet in their libraries and they had shown interest on investing on new channels including SMS (Short Message Service) and RSS feeds (Rich Site Summary). About 90% of council provide downloadable forms and about 23% claimed to provide interactive forms and 41% were developing authoritative databases. About 53% of council had developed links to Local Government Online as a principle information resource. Although 42% of city councils fund initiatives to research use of technology for service delivery, very few of them had formal e-government strategy. Smaller councils benefit more from working in shared services than larger councils. The report concluded that the overall progress of e-government was much less than what was estimated, despite of widespread agreement on importance of technology (LGNZ, 2008). More recently, a 2012 Association of Local Government Information Management survey (ALGIM, 2012) revealed that 38% of local councils had a website strategy and a further 24% were planning to develop one in the following year. The five most visited pages on

council websites were property and rates information, cemetery records, job vacancies, contact information and council plans/publication/reports. All council websites surveyed had a search engine and published council agendas and minutes. Online communication with citizens took several forms, including online submissions (72%), feedback forms (67%), surveys (36%), discussion forums (13%), opinion polls (11%), chat (6%) and citizen panels (3%). Other communicative functions included events calendars (77%), e-newsletters (44%), RSS feeds (50%), online community directories (42%), blogs (13%), podcasts (13%) and webcasts (5%). With respect to interactivity, only 31% of surveyed councils had online forms that went to backend databases via web services, while 88% had online forms going to email. Although 64% of surveyed councils allowed online payment of rates, other online transactions, such as fine payments (25%), council invoice payments (21%), dog registrations (20%), license or consent applications (19%) and property file requests (5%), were less widespread. Another recent study found that although citizens' expectations of their local bodies are changing, for example, from delivery of online information and services to a social networking perspective, there had been very limited provision and uptake at the local government level (Fielden & Malcolm, 2010).

## **2.5 Comparative review**

The objectives and goals of e-government, at both national and local government levels, for four countries, including New Zealand, have been discussed above. The USA strategy is based on the principles of user-centric, result-driven and market-orientation strategies with increasing cross-functional efficiencies (The-Administration, 2012) while the UK has tended to balance several strategic objectives. Besides a user-centric objective, fostering social inclusion and allowing e-government access through other devices, the UK strategy enforces a shared services culture and the raising of levels of professionalism on the part of those delivering the online services. The Australian e-government strategy was primarily focused on service delivery; whereas New Zealand's strategy was focused on public sector evolution through e-government by using ICT to provide higher quality service, thereby satisfying their citizens.

As the objectives and goals for e-government differ between countries, the progress of e-government is also, of necessity, located at differing stages of development. The review shows that the progress of e-government in New Zealand at a national level is slower than the other three countries used as examples. Nevertheless, as will be seen below, New Zealand has a relatively high level of e-government development when compared with most of the world's nations.

There are several benchmarking studies that have been carried out by international organisations, academic establishments and individual researchers to review e-government performance between nations (Mosse & Whitley, 2009; Nurdin et al., 2012; Reddick, 2004). These studies have introduced a number of indicators and composite indices for e-government measurement. Among these, the United Nations e-government survey, conducted regularly since 2003, is widely referenced in the literature. The United Nations assessment of e-government development is based on a composite index that includes an evaluation of the state of national online services, telecommunications infrastructure, and human capital. The results of the United Nations surveys from 2003 to 2012 for the top 20 countries in 2012 are shown in Table 2.5. Countries originally appearing in the top 20 countries in 2003 (last three countries in the table) are also included for comparative purposes.

The figures in Table 2.5 show mixed results in terms of ranking for those countries reviewed earlier in this chapter. Both the USA and Australia moved down in relative the rankings from 2003, with the USA losing its top position from 2008 and Australia dropping 9 places. Over this period, the UK gained 2 places and New Zealand gained 1 place. With a few exceptions, the group of countries in or around the top 20 countries for e-government development has remained relatively stable over the last 10 years, dominated by North America and Europe. The largest gain in ranking was shown by Liechtenstein, which climbed 140 places to break into the top 20 countries in 2012. Other significant increases in relative rankings include France, which gained 13 places and the Republic of Korea and the Netherlands, which climbed 12 and 9 places, respectively, to occupy the top 2 rankings in 2012. The largest decreases in relative ranking were shown by Italy and Iceland, whose rankings dropped to 32 and 34, respectively, by 2012. Another, interesting trend is performance of countries such as Singapore, Finland and Israel, which lost position in the relative e-government development but recovered in subsequent years. It is worth noting that the top 20 countries in 2012 had an e-government development index of 0.80 or higher (the maximum is 1) and that the average for developed countries was 0.73. In comparison, developing countries (excluding the least developed countries) averaged 0.49, and the least developed countries averaged only 0.24.

Country	Ranking						Gain(+) or loss(-) in ranking from 2003 to 2012
	2003	2004	2005	2008	2010	2012	
Republic of Korea	13	5	5	6	1	1	+12
Netherlands	11	11	12	5	5	2	+9
United Kingdom	5	3	4	10	4	3	+2
Denmark	4	2	2	2	7	4	0
United States	1	1	1	4	2	5	-4
France	19	24	23	9	10	6	+13
Sweden	2	4	3	1	12	7	-5
Norway	7	10	10	3	6	8	-1
Finland	10	9	9	15	19	9	+1
Singapore	12	8	7	23	11	10	+2
Canada	6	7	8	7	3	11	-5
Australia	3	6	6	8	8	12	-9
New Zealand	14	13	13	18	14	13	+1
Liechtenstein	154	155	161	49	23	14	+140
Switzerland	8	15	17	12	18	15	-7
Israel	24	23	24	17	26	16	+8
Germany	9	12	11	22	15	17	-8
Japan	18	18	14	11	17	18	0
Luxembourg	25	25	28	14	25	19	+6
Estonia	16	20	19	13	20	20	-4
Ireland	17	19	20	19	21	22	-5
Italy	20	26	25	27	38	32	-12
Iceland	15	14	15	21	22	34	-19

**Table 2.5: Progress of e-government**  
(United Nations, 2003, 2004, 2005, 2008, 2010, 2012)

However, some caution is needed in drawing conclusions from rankings such as these. A comparative study conducted using 11 international survey frameworks revealed that the use of different sets of indicators and different weights assigned to them can lead to varying conclusions on the performance indicators of the countries in terms of e-readiness of e-government (Jansen, 2005). e-Readiness is defined as “*the degree in which a community is qualified to participate in the Networked World*” (Budhiraja & Sachdeva, 2002). Altman (2002) concluded that there is no direct correlation between e-readiness and e-government implementation in a country. These studies reinforce the need for an effective framework that considers the specificities of the assessment environment in addition to focusing on the critical variables for e-government. Jansen recommended that e-government assessment frameworks must include country specific variables besides general e-readiness measures. Further analysis of the pros and cons of e-government assessment frameworks are outside the scope of this study.

It is possible that the situation regarding local-e-government may not be adequately reflected in international studies of e-government rankings, given their primary focus on national government. In addition, local government strategies vary between countries and

also sometimes internally, where e-government strategy between local and central government are not aligned. Further, a large percentage of local governments function with a finite set of resources and are mostly reliant upon funding and direction from higher levels of government (Shackleton & Dawson, 2007). For example, local councils in Australia have often window-dressed their implementations, which have limited functionality, in an effort to maintain legitimacy amongst their communities (Dollery, Marshal, & Worthington, 2003). Similar situations have been found in New Zealand and the UK. In the past, the roles local government in Australia would play in national e-government strategies were omitted on the assumption that they would automatically follow the lead of their state and commonwealth counterparts (Dollery et al., 2003). Further, commonwealth and state governments have appeared more concerned with the measurement of local government electronic service delivery rather than offering funding and assistance to help them move forward in the area. In the USA, Norris and Moon (2005) found that e-government adoption at local government level was progressing faster at the basic level in comparison to interactive and transactional levels, which were lagging behind targets. Unsurprisingly, developing countries in Asia, Africa, South America and Eastern Europe still remain at the emergent stage of local e-government, which mainly consists of a web page or an official website with static information and very little or no public interaction. Indeed, local government websites did not exist in some developing countries five years ago (United Nations, 2008).

## **2.6 Summary**

This chapter has reviewed a range of e-government definitions in relation to their context of use in studies and benefits expected from e-government. The chapter also reviews e-government objectives and strategies, together with the progress made in e-government implementation at local and national government levels, for Australia, the USA, the UK and New Zealand. Finally, it briefly discusses the various benchmarking techniques used in literature to classify and rank e-government development internationally.

## **CHAPTER 3 THEORETICAL BACKGROUND**

### **3.0 Introduction**

As stated previously, there has been relatively limited research on local e-government within the New Zealand context and, therefore, our knowledge of issues or factors that may influence citizen participation or restrict local government implementation is limited. Further, the level of maturity that New Zealand local government websites have reached is also largely unknown. In order to address these deficiencies, the chapter firstly investigates, analyses and critically evaluates existing e-government maturity models from the literature and proposes a maturity model for use in this study. Secondly, it reviews the literature on citizens' expectations of local e-government and the factors that impact on their decisions to adopt or use online local government information and services. Thirdly, it outlines factors that are likely to have influenced local government initiatives in implementing online information and services. Finally, a socio-technical model is proposed for understanding local e-government adoption and implementation, which brings together the range of citizen-related influences and those related to the organisation, environment and technology of e-government.

### **3.1 e-Government maturity**

An initial search of the literature revealed some 20 e-government maturity models published between 2000 and 2010, which were selected for review. In the following paragraphs, the conceptual foundations, embedded assumptions, and shortcomings of these models are discussed. A small number of models subsequently identified after the initial review have not been included in this study because they were each very similar to the maturity models already reviewed.

#### **Gartner (2000)**

Gartner's four stage model (Baum & Maio, 2000) is probably the first e-government maturity model to be published. It was developed in order to provide a tool for measuring the progress of e-government initiatives and also to set up a road map to achieve desired levels of e-government service. The model focuses partly on empowering citizens, and partly on functionality that is grounded in technology and organisational and managerial feasibility. Of the four distinct stages, the first stage of the model is called presence, in which governments post information such as agency mission, contact addresses, opening hours and possibly some official documents of relevance to the public. The main goal is to

provide basic information to the public. The second stage introduces the ability for citizens to interact with government by downloading forms and records, and contacting governmental organisations and officials online. This is followed by a transactional stage in which citizens are able to conduct business online with governments. The final stage is called transformation, where governments redefine the delivery of services by providing a single point of contact to constituents and make government organisation more transparent to citizens.

### **Quirk (2000)**

In Quirk's (2000) four stage model is widely used in the literature. It uses the term 'space' rather than 'stage' to describe the maturity level reached, and emphasises the disparate range of functions provided by a local council. The first stage of the model is *e-Management* where governments improve people management, followed by *e-Service* that offers interfaces with customers. *E-commerce* is the next stage, where councils offer online payments and ordering facilities (similar to a transaction stage). This is followed by *e-Decision* making where councils offer added community information and links to other organisations, bulletin boards, and forums for community issues and discussion.

### **Deloitte (2001)**

Deloitte Research (Deloitte, 2001) developed a six-stage model based on their belief that the purposes of e-government are to serve citizens as customers and to build a long term relationship with them. The first two stages involve *information publishing* and then *two-way transactions*. These are followed by a stage called *multi-purpose portal*, in which governments utilise a single portal to provide services across multiple departments. The fourth stage is *portal personalisation*, in which governments enable users to customise portals. In the fifth stage, governments enhance collaboration to provide a unified *clustering of common services*. In sixth and final stage, e-government reaches *full integration and enterprise transformation*.

### **Layne and Lee (2001)**

Layne and Lee (2001) considered e-government as an evolutionary phenomenon and proposed a four-stage model, based on an integrated perspective by combining technical, organisational, and managerial feasibility. Although the model highlights the authors' observation and experience with the initiatives taken for e-government development in the USA, the authors suggest that e-government is an evolving phenomenon and the development initiatives, therefore, should be accordingly derived and implemented (Sarikas & Weerakkody, 2007). The model begins with a catalogue stage in which static or basic

information is delivered through websites. This is followed by the *transaction* stage that enables people to conduct simple online transactions. The third stage is called *vertical integration*, and involves integration of government functions at different levels, as well as sharing data and information online. The final step is *horizontal integration*, which is the integrating of different functions from separate systems in order to provide users with a unified and seamless service.

### **Hiller and Bélanger (2001)**

Hiller and Bélanger (2001) developed a five-stage model that represents the convergence of stages of e-government development and types of relationships between the government and its various constituents. The model focuses on functionality and considers the potential benefit of political participation. At the first stage governments publish static *information* for public and businesses to consume. This is followed by the second stage, called *two-way communication*, which allows users to communicate online with their government agency via simple requests. At the third stage, governments offer online services including financial *transactions* to citizens. At this stage, citizens are expected to conduct self-services online. An *integration* stage follows, in which customers access government services through a single portal at a single point of entry. Hiller and Bélanger's model differs from other models available at the time in that it includes a fifth stage called *participation*, in which government involves citizens in political participation activities.

### **United Nations (2001)**

Ronaghan (2001) from the United Nations public administration, undertook a study to analyse the approaches taken and the progress made towards e-government on the part of the 190 UN member states. Ronaghan developed a five-stage model based on technology, including the managerial aspects of such technology. It is a model that is centered around web-based functionality and intended to provide increased value to citizens and businesses with every stage of e-government maturity. In the first stage of the model, an *emerging web presence*, governments provide basic and limited information. In the second stage, an *enhanced presence* of governmental information is made available on official website 24 hours a day, 7 days a week. The next two stages are *interactive* and *transactional*, and are largely similar to the stages of the Hiller and Bélanger (2001) and Gartner (2000) models. The final stage is a *seamless web presence*, and is similar to the third and fourth stages of Layne and Lee's (2001) model.

### **Windley (2002)**

Windley (2002) proposed a four-stage model based on service delivery process and quality improvement. The first stage of the model involves a simple website based on *attributes*; this is similar to the information stage of the models discussed above. This is followed by the second stage, in which governments provide a number of *online* interaction mechanisms, such as email and web based forms, which make it possible to offer information to users and provide assistance and feedback. The third stage is *integrated government*, whereby governments bring multiple processes together in a meaningful way so that citizens can carry out end-to-end electronic transactions, i.e. full integration into back office systems and processes. In the final stage, a *transformed government* offer services that are developed from citizens' perspectives.

### **Chandler and Emanuel (2002)**

Chandler and Emanuel (2002) developed a four-stage model that partly focuses on the citizen-centric functionality of government organisations. The four stages are *information, interaction, transaction, and integration*, and are similar to the first four stages of Hiller and Bélanger's (2001) model.

### **Moon (2002)**

Moon (2002) adopted Hiller and Bélanger's (2001) five-stage model, making some changes in the phrasing and content of the stages, and similarly focusing on functionality and the potential benefit of political participation.

### **Wescott (2004)**

Wescott (2004) identified that Asia-Pacific governments were only in the initial phases of delivering government services online due to slow adoption of ICT in their public sectors. Wescott proposed a six-stage customer-centric model that focuses on the increasing online functionality of public organisations. In the first stage, government organisations use *e-mail and an internal network* for information sharing, coordination and feedback. This is followed by stage two, which is the enabling of *inter-organisational and public access to information*. In this stage governments develop electronic workflow systems. The third and fourth stages are similar to the interaction and transaction stages of models discussed above, focusing on *two-way communication* and the *exchange of value*, respectively. These are followed by the fifth, *digital democracy* stage similar to the Hiller and Bélanger's (2001) participation stage. The sixth stage represents *joined-up government* and is similar to the last two stages of Layne and Lee's (2001) model.

### **Accenture (2004)**

Accenture surveyed e-government development over 20 countries across the world using a multi-stage model. In 2003, the multi-stage model was enhanced to a five-stage model by focusing on the service delivery and e-commerce side of e-government. According to Accenture (2004), exploiting the portal model for the delivery of government services is key for countries to remain ahead in e-government development. The first stage of the Accenture model is an *online presence* similar to the information stage of various models discussed above. This is followed by stage two, whereby website features are enhanced in order to broaden the online presence and provide a *basic capability*. This involves creating a central plan, developing a legislative framework, addressing the problem of security and certification, introducing digital signatures and implementing some easy transaction capabilities. Stage three of the Accenture model is focused on *service delivery* and is similar to the integration stage of models discussed earlier. It is followed by a stage called *mature delivery*, in which governments are expected to implement across different levels clear ownership, responsibility, authority, intra-agency relationships, and collaboration. The objective of the fifth and final stage is to improve customer service by *service transformation* and the elimination of problems.

### **West (2004)**

West (2004) proposed a four stage model of e-government development. The first two stages, *billboard* and *partial service delivery*, are similar to the information and interaction stages of previous models, and are followed by a *full integrated* service delivery stage in which a government portal is created with fully integrated online services. This enables citizens to access government information from a single service centre. In West's model, the government website caters to multilingual citizens, as well as those with visual and hearing impairment. The final stage, *interactive democracy*, is similar to the participation stage of earlier models. In this stage, governments focus on enhancing democratic responsiveness and leadership accountability.

### **Janssen and van Veenstra (2005)**

Janssen and van Veenstra (2005) believe that an e-government maturity model needs to focus on the information architecture's maturity process. That is, rather than placing emphasis on online services to citizens and business, the focus should be on the information architectures connecting the information systems in the back and front offices of local governments. Janssen and van Veenstra propose a five-stage model which

describes a gradual expansion from no integration architecture to an architecture coordinating complete business processes and interactions with external systems, via an architecture coordinating back and front office applications. The first, *no integration*, stage of this model simply provides information. This is followed by *one-to-one messaging*, in which governments set up an electronic connection for each service to be delivered, and related data is stored in back office systems and automatically published on the website. The third stage is *warehouse architecture*, in which data coming from various systems is imported into a data warehouse to provide a single point-of-access. In the fourth, *broker architecture* stage, information is exchanged between agencies on a real-time basis. A broker is a central point for information exchange that passes on information between the different information systems in real-time and invokes other types of technical services. The last stage is an *orchestrated broker architecture*, where business logic is included in the information broker to create workflows and complete business processes.

#### **Siau and Long (2005)**

Siau and Long (2005) found that a number of maturity models existed in the e-government without a common framework for reference. They developed a five-stage model by applying Noblit and Hare's (1988) qualitative meta-synthesis approach to existing maturity models. The five stages, *web presence*, *interaction*, *transaction*, *transformation* and *e-democracy*, are similar to the stages in Hiller and Bélanger's (2001) model.

#### **Andersen and Henriksen (2006)**

Andersen and Henriksen (2006) proposed a four-stage model called Public Sector Process Rebuilding (PPR). This model has more focus on the strategic ambitions of government's use of IT, in contrast to the traditional motives behind IT adoption (increase in information quality and efficiency and effectiveness). In this model there is an emphasis on the automation or integration of the core government activities; not from the perspective of what is technologically feasible, but rather from the perspective of what is beneficial for end-users, regardless of the possible organisational changes that take place. The researchers stress that the four stages of the proposed model are not distinct stages, but rather represent discrete points in a continuous development process in the organisation. The first stage, *cultivation*, offers horizontal and vertical integration within government in addition to the adoption and use of intranets within government, and the limited use of front-end systems for citizen services. This is followed by a second, *extension*, stage, which involves extensive use of intranet and the inclusion of personalised Web user interfaces for citizens. The third stage is called *maturity*, in which governments mature, abandon the use of the

intranet, and offer a personalised Web interface for processing of customer requests. The last, *revolution*, phase offers data mobility across organisations and data ownership transferred to customers. An employee's actions can be traced and viewed through the Internet, e.g. the status of a case or an application can be viewed online.

**Shahkooh , Saghafi and Abdollahi (2008)**

Shahkooh, Saghafi and Abdollahi (2008) argued that a citizen-oriented e-government cannot be achieved by simply putting processes on the Internet and launching websites rather it involves business transformation and possibly also government reform. The e-government system should progress gradually and in a stepwise fashion while all functionalities are being developed. Using a qualitative meta-synthesis (Noblit & Hare, 1988) approach on nine e-government maturity models, Shahkooh et al. proposed a five-stage model, comprising *online presence, interaction, transaction, transformation* and *digital democracy*, that is similar to Hiller and Bélanger's (2001) model.

**Kim, Lee and Kim (2008)**

Drawing on the PPR model of Andersen and Henriksen (2006), Kim, Lee and Kim (2008) conceptualise a three stage model of e-government development. Each stage describes the goals of e-government initiatives and the types of organisational entities that are involved. Even though the development of e-government does not always evolve stage by stage, three stages of e-application development can provide a useful framework for understanding the general pattern of development processes among heterogeneous e-government applications. The first, *initiation*, stage involves creating a vision for e-government and making it available online. Governments need to first identify services and assets. After this, they must then identify how existing laws, regulations and policies will influence the deployment of those assets. The second stage, *application development*, is similar to the transaction stage of earlier models, while the third, *integration*, stage is similar to the last two stages of Layne and Lee's (2001) model.

**Susanto, Goodwin and Calder (2008)**

Addressing the lack of usage of online government services, especially in developing countries, Susanto, Godwin and Calder (2008) suggested that until the gap between what is offered and what is used can be bridged, e-government is far from reaching its potential and that governments will not be able to justify large investments in e-government initiatives. Susanto et al. believed that short-message-service (SMS) based government services would be more effective than Internet-based services, and proposed a six-stage

model. The first, *listen*, stage involves one-way communication from citizens to government, in which citizens can raise their concerns directly by sending messages electronically. Such messages may include: complaints about government services, projects, or officials; opinions about new policy; enquiries about new programs; or reports about corruption. This is followed by a *notification* stage in which governments broadcast important public information and inform citizens of their personal information. Services at this level use a push-based mechanism, which sends the messages to citizens according to data on the server rather than at the request of any one user. In the third, *pull-based*, stage, citizens can access their personal or public information any time and place. This is followed by a *communication* stage that enables citizens to express their opinion, make comments, or send queries to the government by using sentences, without having to worry about the text format or whether or not a reply will be received immediately. Further, this stage offers benefits in accessibility, availability, responsiveness, courtesy, helpfulness, usability, timeliness, accountability, and transparency. The last two stages are similar to *transaction* and *integration* stages of other models, except that they are based on SMS.

#### **Jayashree and Marthandan (2010)**

After a thorough and systematic study of existing maturity models, Jayashree and Marthandan (2010) proposed a model which extends the Gartner (2000) four-stage model by adding another stage called *e-society* to include the social, economic, legal, political, and technological factors of the environment. The authors believe that a high degree of citizen's participation is key to the success of e-government, and they suggested that government should encourage citizens to participate in the construction of e-government.

#### **Kim and Grant (2010)**

Kim and Grant (2010) found that e-government maturity models are in their infancy and that little attention has yet been paid to the theory underpinning the transition from one maturity stage to the next, or how organisational resources are effectively managed at each stage. Their model is based on Intellectual Capital (IC) management and the Capability Maturity Integration (CMMI) models and aimed at improving the shortcomings of existing maturity models. The first four stages are similar to the *web presence* (information), *interaction*, *transaction* and *integration* stages of various models discussed above. The final stage is called *continuous improvement*, and involves the support of e-government initiatives by continuously improving processes, innovative technologies, and the cooperation of other governments. Performance of e-government is effectively achieved by concentrating on continuous improvement efforts.

### **3.1.1 Summary of the maturity models reviewed**

Table 3.1 summarises the twenty e-government maturity models, and their stages, reviewed for this study. The small number of models subsequently identified after the initial review have not been included in this study because they were each very similar to the maturity models already reviewed. Most models propose transaction services in stage three except Layne and Lee (2001), Deloitte (2001), Wescott (2004) and United Nations (2001). Deloitte (2001) research focuses on delivery of government services from a single point by using a portal which provides a full range of services and enables customers to make easy and single access to government services without the need to know which agency is responsible for which service. Irani, Sebie and Elliman (2006), argued that stages three, five and six of the Deloitte model have similar functions and that these stages could be embedded or encompassed into one integration stage.

Further, several models fail to consider political participation or e-democracy. Jayashree and Marthandan's (2010) model is probably the first model that defined e-society to include the social, economic, legal, political, demographic, global, and technological factors that are seen in that environment. Hiller and Bélanger (2001) argue that the political participation stage is essential to the ultimate objective of the evolution of e-government. Similarly, Siau and Long (2005) have argued that a maturity model should consider political participation because the range of e-government is far more advanced than website intensive activities. However, the Gartner (2000), Layne and Lee (2001), and Chandler and Emanuel (2002) models overlook the political participation component. However, Lee (2007) has argued that services provided through a e-democracy stage should not necessarily be separated out, and that such services can be covered adequately in the transaction stage of a fully functional e-government model. Generally, the levels of progression of e-government development inherent in the stage-based maturity models imply a movement from passive to interactive transactions ending with digital democracy. The overall typology of technology and organisations was used as a starting point for the development of e-government maturity models. Further models emphasised digitising government activities, not from the perspectives of what is technologically feasible, but from the perspective of what is beneficial for end-users.

Maturity Model	Stage1	Stage2	Stage3	Stage4	Stage5	Stage6
Gartner (2000)	Presence	Interaction	Transaction	Transformation		
Quirk (2000)	e-Management	e-Service	e-Commerce	e-Decision		
Deloitte (2001)	Information publishing	Official two-way transaction	Multipurpose portal	Portal personalisation	Clustering of common services	Full integration and enterprise transformation
Layne and Lee (2001)	Catalogue	Transaction	Vertical integration	Horizontal integration		
Hiller and Bélanger (2001)	Information	Two-way communication	Transaction	Integration	Political participation	
United Nations (2001)	Emerging web presence	Enhanced web presence	Interactive web presence	Transactional web presence	Seamless web presence	
Windley (2002)	Attributes	Online government	Integrated government	Transformed government		
Chandler and Emanuel (2002)	Information	Interaction	Transaction	Integration		
Moon (2002)	Simple information dissemination (one-way communication)	Two-way communication (request and response)	Service and financial transaction	Vertical and horizontal integration	Political participation	
Wescott (2004)	Setting up an email system and internal network	Enabling inter-organisational and public access to information	Allowing 2-way communication	Allowing exchange of value	Digital democracy	Joined-up government
Accenture (2004)	Online presence	Basic capability	Service availability	Mature delivery	Service transformation	
West (2004)	Billboard	Partial service delivery	Full integrated	Interactive democracy with public outreach and accountability		
Janssen and van Veenstra (2005)	No integration	One-to-one messaging	Warehouse architecture	Broker architecture	Orchestrated broker architecture	
Siau and Long (2005)	Web presence	Interaction	Transaction	Transformation	e-democracy	
Andersen and Henriksen (2006)	Cultivation	Extension	Maturity	Revolution		
Shahkooh, Saghafi and Abdollahi (2008)	Online presence	Interaction	Transaction	Transformation	Digital democracy	
Kim, Lee and Kim (2008)	Initiation	Application development	Integration			
Susanto, Goodwin and Calder (2008)	Listen	Notification	Pull-based information	Communication	Transaction	Integration
Jayashree and Marthandan (2010)	Web presence	Interaction	Transaction	Integration	e-society	
Kim and Grant (2010)	Web presence	Interaction	Transaction	Integration	Continuous improvement	

Table 3.1: e-Government maturity models and stages

### 3.1.2 Comparative review of maturity models

Several models have been evaluated and their characteristics have been highlighted. Most of the models propose four stages (e.g. *information, interaction, transaction and integration*) except a few where a fifth or the final stage is described variously as either *e-participation, e-democracy, e-society, governmental transformation* or some combination of the above. According to Coursey and Norris (2008) approaches focusing on political activity would broaden the scope of

maturity model studies. Most maturity models are based on technical, organisational, and customer-centric perspectives, and include stages based mainly on qualitative observation, the researchers' experience, or some undocumented arguments. For example, Layne and Lee's (2001) model is developed primarily based on the authors' observations of and experience with e-government initiatives, and Siau and Long's (2005) model lacks reasons for using a specific set of stages. Thus, a problem with contemporary stage models is the lack of sound arguments or empirical validation of the stages and their definitions. There is often a normative value in the stage model which supposes an evolution over time, which implicitly assumes that a stage is 'better' than the stages that precede it. The tendency in such models is to label maturity in opposition to immaturity as a distinct variable (Andersen & Henriksen, 2006).

In addition, stage models implicitly or explicitly assume adoption of e-government is a linear process from early stage to later stages, and with clear boundaries between the structural transformations among stages (without empirical support). For example, Siau and Long's (2005) model clearly bears out this linearity. However, in practice, a government might face technological challenges in the early stages, and cultural and/or political challenges in the later stages, and might be involved in the third stage either directly or in the multiple stages simultaneously without passing through previous stages. A study by Coursey and Norris (2008) indicates that municipalities in the USA do not progress through linear stages: *"e-government is not linear. Late adopters of e-government need not start at the most basic level of e-government. They can and do learn from the experiences of other governments and the private sector and begin with more sophisticated offerings"* (p: 533). Coursey and Norris (2008) also found from their study that the development of e-government needs to be slow and incremental instead of progressive and not stepwise or through stages. Furthermore, political participation does not necessarily constitute a higher level of technical sophistication. For instance, the use of a complicated system in an early stage (e.g. the integration stage) can be more sophisticated than the services in the political participation stage. For this reason, Jayashree and Marthandan (2010) and Lee (2007) argue that political participation cannot be the top-stage of a maturity model.

However, there are advantages to having a staged approach in which the information systems grow and evolve as governments go through a number of stages before reaching maturity. Staged maturity models are an important managerial tool for establishing plans, clarifying the scope of e-government activities, allocating resources, monitoring activities, assessing performance, and guiding governments over the long term. The stage model

offers conceptual guidelines about the essential requirements and components of each maturity stage. Furthermore, the maturity model enables employees to enhance their understanding of e-government activities, and also offers external customers valuable opportunities to not only understand governments' invisible endeavors for improving public services but also indispensable reasons for investing in e-government activities.

### **3.1.3 Proposed e-government maturity model**

The review of literature on e-government stage models highlights their potential shortcomings in their capacity to capture the drivers and evolution of e-government. Studies on e-government maturity models are still in their infancy and falling behind practitioners' needs (Claver-Cortés, de Juana-Espinosa, & Tarí, 2006; Gottschalk, 2009; Klievink & Janssen, 2009; Siau & Long, 2005). This suggests that the development of a clearer and empirically validated model is essential for e-government research to grow from a less developed research field towards a more mature research field. In addition, the literature suggests that the maturity of e-government services for national governments follows a linear path, while the same may not be true of local councils, for whom community engagement and participation are more prevalent (Shackleton et al., 2004). Although many individual local council suffer from a lack of financial and human resources, there are many councils, which have a strong web presence, and it is both relevant and important to study the stages of e-government maturity at the local level.

It has been suggested that governments look beyond the economies-of-scale benefits of e-government and focus more on streamlining processes and improving communications with citizens (Layne & Lee, 2001). Several studies have proposed a number of capabilities that are needed for the transformation from one stage to another in their models (Daniel & Wilson, 2003; Eisenhardt & Martin, 2000). According to Klievink and Janssen (2009) the stage model can potentially serve as a planning instrument for policymakers to monitor the development of capabilities. On the basis of the capabilities required for each stage, governments can prepare for the next generation of digital government infrastructures. A number of studies have also proposed that e-government matures in various spaces rather than in distinct, linear stages (Quirk, 2000; Stamoulis, Gouscos, Georgiadis, & Martakos, 2001).

Based on the preceding literature review, this study proposes to employ a local e-government maturity model comprising of four stages that aim to include government-citizen interaction and delivery of all government services. Each stage of the model can be

understood as one element in formulating a strategic milestone of local e-government development and progress. Overall, the model can play a significant role in assessing organisational efforts and monitoring activities over the long term. Importantly, the four stages are seen as four spaces in a continuous development process in the organisation, and should therefore be used as indicators for positioning the organisation in the e-government landscape, rather than as absolute measures. The greatest level of maturity depends on the successful integration of both business processes and technical capabilities across organisations and different jurisdictional levels of government. Nevertheless, the concept of government transformation as the ultimate goal of e-government implementation is explicit, and assumes that change to business systems and processes in government, and governance structures, is both desirable and inevitable. A description of the four stages of the proposed model follows.

### **Information**

The first stage involves a website presence that provides an overview of useful council information for citizens. The website is considered to be static and enables citizens to access information and download forms. Such information may include: council plans and strategies; policies and annual reports; political meeting details; agendas; meeting minutes; and information on rates, valuations, properties, building and resource consent, food, liquor, animal and health licensing, street permits, libraries, parks, community halls, cemeteries, waste and recycling, pets and diseases, storm water, and so on. The provision of such information is intended to save the council time and money, since much staff time is spent answering basic questions about local government services and procedures. A web presence reduces the workload of council administrators because it is the functional equivalent of being open twenty-four hours a day, seven days a week. Citizens are viewed as consumers of information at this stage, in which communication is one-way and no online transactions take place.

### **Interaction**

At this stage, councils have an enhanced website presence, with various capabilities that enable citizens to interact with local government. For example, from the website, citizens are able to query a council's actions; request services; book community halls, leisure centres, and community courses; request rubbish collection; place an order for property reports; and request many others services directly from the website or by sending an online request to the council. This stage involves two-way-communication, but lacks a full online transaction facility. Some e-democracy services are offered in this stage, such as the ability

for citizens to provide feedback and express their opinion on council strategies, policies and plans; participate in an online community forum; and other features designed to enhance democratic responsiveness and leadership accountability.

### **Transaction**

In this stage, citizens can complete entire, secure online transactions of value that require confidential personal and financial information. For example, citizens are able to electronically pay taxes, fines, rates or fees. Also offered at this stage are transaction-based services related to e-democracy, such as voter registration and online voting. Transactions conducted electronically improve efficiency for both customers and the agency. This stage provides citizens with facilities that allow them to transact with their local council online, at any time and from any place. This makes local government more accessible for those who cannot visit council offices because of mobility, geography or work commitments.

### **Integration**

This stage involves both internal and external integration. Seamless online local government services are provided across administrative boundaries, vertically and horizontally, in different locations and at divergent levels. Citizens can access government information and customise online services. This stage is seen at the local, regional and national levels, and consists of integration among inter-governmental operational processes and external applications in order to provide full communication between the governmental offices and non-governmental organisations. For external interfaces, governments build a single and unified portal providing integrated and seamless services instead of separate and distributed services. At the same time, government should initiate an internal integration process to re-engineer existing processes by reducing bottlenecks and intermediaries.

Table 3.2 lists the stages of the proposed model, define each stage, and show how the stages align with the various existing e-government maturity models reviewed for this study. The first stage of the proposed model, information, is similar to the first stage of most existing models. The main difference between the proposed model and existing models lies in the second and third stages, where political participation between citizens and governments are included as part of interactions and transactions. The position taken here is that political participation cannot be the top stage of an e-government maturity model. Assuming Netchaeva (2002) is correct, and democracy requires full participation from all citizens, then the Internet can only be used for a limited set of democracy

functions, such as communications (both one-way and two-way) and non-financial transactions (voter registration, online voting) between government and citizens, which do not require a high level of technical sophistication (D.-Y. Kim & Grant, 2010). The last stage is of the proposed model is similar to the integration stage of previous models.

Stage	Definition	Aligns with
1. <b>Information</b>	Basic website presence providing one-way communication from council to citizens, including access to council information and forms download	<b>Stage 1</b> Accenture(2004), Andersen and Henriksen (2006), Chandler and Emanuel (2002), Deloitte (2001), Gartner (2000), Hiller and Belanger (2001), Janssen and van Veenstra (2005), Jayashree and Marthandan (2010), Kim et al. (2008), Kim and Grant (2010), Layne and Lee(2001), Moon (2002), Quirk (2000), Shahkooh et al. (2008), Siau and Long (2005), United Nations (2001), West (2004), Windley (2002).
2. <b>Interaction</b>	Enhanced website presence providing two-way communication and interactions between council and citizens	<b>Stage 2</b> Accenture(2004), Chandler and Emanuel (2002), Deloitte (2001), Gartner (2000), Hiller and Belanger (2001), Janssen and van Veenstra (2005), Jayashree and Marthandan (2010), Kim and Grant (2010), Moon (2002), Quirk (2000), Siau and Long (2005), Shahkooh et al. (2008), Susanto et al.(2008), United Nations (2001), West (2004) <b>Stage 3</b> Accenture(2004), Janssen and van Veenstra (2005), Susanto et al. (2008), United Nations (2001), Wescott (2004) <b>Stage 4</b> Accenture(2004), Susanto et al. (2008) <b>Stage 5:</b> Hiller and Belanger (2001), Moon(2002), Susanto et al. (2008), Shahkooh et al. (2008).
3. <b>Transaction</b>	Citizens can complete entire, secure online transactions of value that require confidential personal and financial information	<b>Stage 2</b> Layne and Lee (2001) <b>Stage 3</b> Deloitte (2001), Gartner (2000), Hiller and Belanger (2001), Janssen and van Veenstra (2005), Jayashree and Marthandan (2010), Kim and Grant (2010), Moon (2002), Quirk (2000), Shahkooh et al. (2008), Siau and Long (2005), West (2004) <b>Stage 4</b> Quirk (2000), United Nations (2001), Wescott (2004), West (2004) <b>Stage 5</b> Hiller and Belanger (2001), Moon (2002), Shahkooh et al. (2008), Siau and Long (2005), Susanto et al. (2008), Wescott (2004)
4. <b>Integration</b>	Internal and external integration to provide seamless online local government services	<b>Stage 3</b> Layne & Lee (2001), Kim et al. (2008), West (2004) <b>Stage 4</b> Andersen and Henriksen (2006), Chandler and Emanuel (2002), Gartner (2000), Hiller and Belanger(2001), Jayashree and Marthandan (2010), Kim and Grant (2010), Layne and Lee (2001), Moon (2002), Shahkooh et al. (2008), Siau and Long (2005), Windley (2002). <b>Stage 5</b> Accenture(2004), Deloitte (2001), Janssen and van Veenstra (2005), United Nations (2001), <b>Stage 6</b> Susanto et al. (2008), Wescott (2004)

Table 3.2: e-Government maturity model and its alignment with existing models

Figure 3.1 shows the different stages of the model. They are seen as four spaces in a continuous development process in the organisation and should be used as indicators for positioning the organisation in the e-government landscape, rather than as absolute measures. The greatest level of maturity depends on the successful integration of both

business processes and technical capabilities across organisations and different jurisdictional levels of government. Thus it is not necessary that a local council begins at the information stage and progressively moves through the subsequent stages. Rather, the proposed stage model allows a council to potentially enter at any stage or to simultaneously develop in each of the spaces represented by the four stages. The arrows in Figure 3.1 represent the multiple pathways that local councils can pursue in developing e-government.

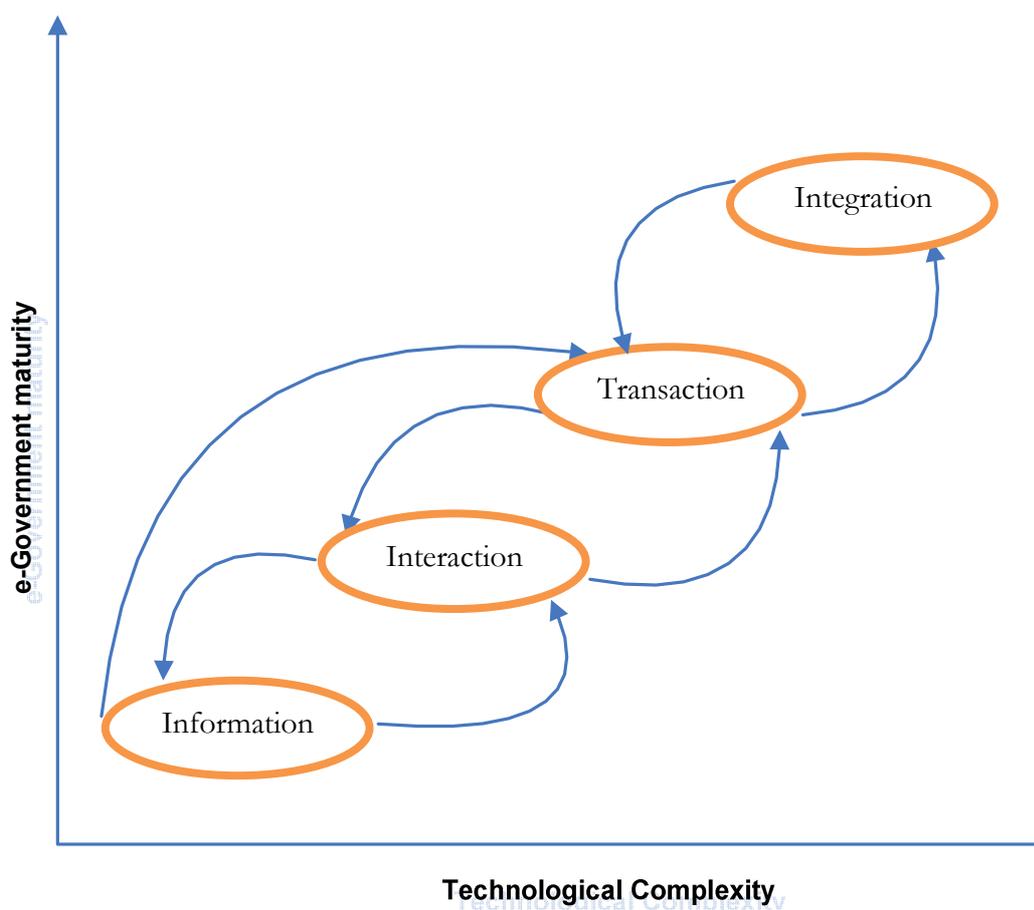


Figure 3.1: Proposed e-government maturity model

Having addressed the issue of e-government maturity, in the following sections, we will review the literature on citizens' expectations of local e-government and the factors that impact on their decisions to adopt and use online local government information and services. This is followed by sections outlining factors that are likely to have influenced local government initiatives in implementing online information and services.

### **3.2 Citizen factors in e-government participation**

Factors that potentially affect citizens' adoption and use of their local government online information and services are discussed in the following section.

### **3.2.1 Expectations**

According to ‘confirmation-expectation’ theory (Oliver, 1980) individuals’ expectations of products or services are based on their pre-usage beliefs with respect to characteristics or benefits that are formed on the basis of prior experience with similar products and/or services (A. Bhattacharya & Premkumar, 2004; McKinney, Choudhury, & Kacmar, 2002). Sometimes expectations can vary with certain products or services according to the level of media coverage or word of mouth. Sometimes the level of expectation is ambiguous when users have no prior experience and have no basis on which to determine the acceptable, desired or valued attributes of product or service (Van Ryzin, 2004). This is generally expected with any new product or service. Using data from a New York City citizen survey, Van Ryzin (2004) suggested that cultivating low expectations—in the sense of warning citizens to expect less from the government due to budget constraints or service cuts, may not be an optimal public relations strategy for managers of public service, even in difficult times. Instead, public managers should seek to promote not only high-quality services, but also high expectations among potential users.

In the online environment, ‘citizens’ expectations’ are defined as learned predispositions to adoption or rejection of online government information and services (Verdegem & Verleye, 2009). This definition is also used in studies to measure customer satisfaction with e-government service quality (Schedler & Summermatter, 2007; Van Ryzin, 2004). Several researchers have mooted the idea that an understanding of the needs and expectations of the public could do a lot towards closing the gap between those expectations and reality (Bertot, Jaeger, & McClure, 2008; D. Bhattacharya, Gulla, & Gupta, 2012; Dada, 2006). Verdegem and Verleye (2009) suggested that any public organisations need to evaluate the impact of their proposed strategies on potential users and take citizens’ expectations into account when designing electronic services for the future. Ho (2002) argued that an understanding of customer expectations and needs are crucial to e-government adoption and that gathering information on this is complex and requires significant resources. In order to focus on citizens’ requirements, many public organisations have initiated the implementation of citizen-centric e-government (Verdegem & Verleye, 2009). For example, the Canadian government’s e-strategy, known as Citizen-Centered Service Delivery (CCSD), is explicitly based on the needs and expectations of its citizens. However, the citizen-centric approach to e-government has been criticised for a number of reasons, including: its effects on equity of service provision for citizens (Fountain, 2001), the interaction between government and citizen and that participation does not include in all

parts of societies, and the narrowing down of enlightened and multifaceted citizens into the notion of consumers of public services (Homburg, 2008).

Yonazi, Sol and Boonstra (2010) argue that to encourage the adoption of e-government initiatives there needs to be a perception, by the public, that their needs and expectations will be met or otherwise they will be reluctant to leave traditional channels for online government information and services. Selen and Schepers (2001), and Bertot, Jaeger and McClure (2008) maintain that the best way to create customer value is by delivering electronic public services that really meet customers' expectations. Schedler and Summermatter (2007) found that meeting customer expectations regarding quality of information, responsiveness and the attitude of the service provider all influenced rapid adoption of e-government services. In summary, customer satisfaction is affected by their expectations of the product or service, which in turn affects efficient adoption or use of that product or service (ICCS, 2003). Jansen (2005) is of the opinion that the challenge in evaluation of e-government lies in the consideration of various perspectives, some of which might not only require addressing and meeting the general expectations of a target group such as citizens, but also require the integration of the needs of specific target groups using a particular e-government service, such as the unemployed, families, pensioners, architects, lawyers, or students.

### **3.2.2 Awareness**

Lack of awareness of a given technology or of its advantages can be a major barrier to the adoption of that technology. Taherdoost, Masrom and Ismail (2009) defined awareness as the degree to which an individual has knowledge of the technology. That knowledge comes with the use of various media to promote understanding of the incipient technology, which will in turn encourage potential users to try it. According to Rogers (1995), adoption of an innovation is a lengthy process wherein the decision to adopt any given innovation should follow awareness. In a study on smart card adoption, Safeena, Addulla and Date (2010) suggested that any potential user's awareness about smart card technology can have a flow-on effect of user satisfaction and thereby swift uptake of the new innovation and public acceptance.

Jaruwachirathanakul and Fink (2005) found that awareness in the early stages of an implementation of IT contributes to a willingness to adopt new technologies such as Internet banking. Safeena et al. (2010) argued that if potential users do not understand a new technology they will be less likely to adopt it. She referred to an empirical study of

Australian consumers where these consumers were unaware about the possible advantages or disadvantages involved with online banking. She highlighted that awareness and understanding is paramount in the adoption of any new technology. Sohail and Shanmugam (2003) found that awareness of e-banking was one of the three major factors affecting the adoption of Internet banking services (the others were Internet accessibility and attitude towards change to a new channel). Laforet and Li (2005) identified a significant difference between users and non-users of online banking in terms of their level of awareness of the services available. About one-third of their sample of non-users had heard about it but did not use it because they were unclear about its benefits and the remaining two-thirds of non-users were not aware that online banking could be a viable option for them.

In line with the above findings, it can be presumed that in an e-government context the user must be aware of the existence of electronic public information and services before an intention to access them can arise. A lack of awareness of e-government and its available services prevents citizens from becoming familiar with the added value that online public information and services could offer. Indeed, Verdegem and Verleye (2009) have identified ignorance as one of the reasons for the low volume of e-government transactions. Damodaran et al. (2005), and Colesca and Liliana (2008) argue that in order to achieve the goals of e-government, i.e. increasing the usage of e-government services, the public need to be aware of the availability of these services and their benefits. Carter and Weerakkody (2008) found that those users who were more technically savvy, with broadband in the home, were more likely to participate in an online forum. AlShihi (2005) investigated the adoption of e-government services in places such as Oman, where a lack of publicity was a major barrier. Similarly, Al-Adawi and Morris (2009) found that a lack of publicity about the advantages of e-government directly affected participation in e-government initiatives for 85% of the population in the state of Qatar.

Choudrie and Dwivedi (2005) examined public awareness and adoption of e-government initiatives in the UK and found that the demographic characteristics of citizens such as the age, gender, education, and social class play an important role in explaining a readiness for participation in the mooted e-government services. Weerakkody, El-Haddadeh, and Al-Shafi (2011) suggested government should attempt to overcome this inexperience problem by conducting widespread and pro-active campaigns targeting potential users, informing them of the real benefits and advantages that could be gained. In 2005, the UK government launched a media campaign to spread awareness of e-government services and

to encourage citizens to connect to their local council websites. Although these campaigns raised public awareness and increased the use of e-government services for small and medium sized councils, the changes in the usage for larger councils' services were found to be negligible (Cross, 2006). Susanto and Goodwin (2010) argued that awareness of services alone is not sufficient to encourage citizens usage; there are other factors that need to be considered and strategies implemented to encourage the use of information and services.

### **3.2.3 Motivation**

Motivation has been found to be a key factor in determining human behaviour and attitudes towards technology adoption. Those indifferent to technology development will feel no particular motivation to participate. Researchers suggest that as each individual is different, it follows that what motivates each individual will be different (Lin, 2007; Omar & Sapuan, 2010). Motivation reflects those psychological forces that direct behaviour, levels of commitment in achieving goals or the level of persistence required in problem solving. One understanding of motivation classifies it in two broad types – intrinsic and extrinsic (Vallerand & Blssonnette, 1992). Extrinsic motivation refers to a behaviour that is performed for material or social rewards that come from outside the individual. These rewards provide satisfaction and pleasure that the task itself may not provide. Omar and Sapuan (2010), compared the characteristics of successful and failed corporate attempts to integrate Internet technology into their business model. The results indicated that those having the most success were those companies that tackled people's attitudes to change. This was achieved through a system of providing rewards, explanations of the benefits of technological change and encouragement of employee participation in the changes.

Intrinsic motivation refers to motivation that comes from inside an individual rather than from any external rewards. The motivation comes from the pleasure one gets from the task itself or from the sense of satisfaction in completing or even working on a task. A number of studies considering the influence of intrinsic motivation on the adoption of new IT (Saade, 2007; Saade & Bahli, 2005). In the context of student acceptance of web-based learning systems, Saade and Bahli (2005) believed that intrinsic motivators such as a student's subjective feelings of joy, elation, pleasure, and experience play a critical role in explaining user acceptance and usage behaviour. However, people motivated by pure intrinsic factors may present a risk of being more inclined to pursue their own goals instead of their organisation's goals. A further complicating factor is a potential conflict between the needs of the organisation and the emotions of the operator.

Several studies have focused on the interplay between extrinsic and intrinsic motivation and identified that increasing extrinsic motivation can lead to decreased intrinsic motivation. In other words, it is mooted that extrinsic motivation can, in some cases, undermine employees' interest in their jobs and negatively affect intrinsic motivation (Galia, 2007). Further, it is suggested that there might be a negative effect in introducing extrinsic motivation to those who are already intrinsically motivated. Omar and Saupan (2010) expressed an opinion that people can be intrinsically or extrinsically motivated, or both, and can therefore be considered in a multidimensional framework. They presumed that the different kinds of motivation cannot be used as independent factors. However, few studies conclude that the combination of extrinsic and intrinsic factors contributes to organisational performance (Galia, 2007). A consumer's motivation to use a service such as Internet banking is influenced by a combination of elements that includes freedom of time and space, speed, convenience, twenty four hours a day availability and price incentives, all of which are examples of extrinsic factors (Mattila, Karjaluo, & Pento, 2003).

Several studies have identified similar issues that may have influenced citizens' motivation to participate in e-government. Many public organisations have attempted to engage citizens in online policy dialogues or have partnered with local community organisations to strengthen citizen participation with limited success, partially, it is suspected, due to lack of any motivation for the public to establish an online relationship with the government (Damodaran et al., 2005). Keskinen and Kuosa (2006) insisted that citizens need to be given some sort of motivation to participate in the public arena and this presents a challenge for any local authority. The general public need to be assured that the new paradigm will give voice to their concerns and that their input can have an impact on decision making. This implies a strengthening of the social contract – if citizens take a more proactive role in local government through new online media, their input can have a meaningful impact on the decisions their elected representatives make. Local and central government need to develop strategies that will improve the level of motivation and widen the skill-base in the use of IT solutions. Shin, Kim and Lee (2006) suggested that policy makers should make plans of action on enhancing external and internal influences for non-adopters and try to solve the problems that impede the online relationship between government and passive citizens and motivate citizens' commitment to this relationship. Further, the study suggests that information availability and cheaper communication channels by themselves may not extrinsically motivate individuals to participate. Rather, it is individuals and organisations that are already active in politics that have easier access to

information, that are believed to be the predominant users of e-government (Stanley & Weare, 2004), which is an example of both extrinsic and intrinsic motivation.

### **3.2.4 Relative advantage**

The perceived relative advantage of a technology or innovation is a commonly cited factor influencing its adoption and use (Rogers, 1995). Relative advantage is defined as the perception that a new system allows one to accomplish a task more effectively or efficiently than the current system. It is often referred to in terms of convenience, savings in time and effort, or a decrease in discomfort in adopting or using an innovation (Carter & Belanger, 2004). Carter and Weerakkody (2008) expressed that relative advantage stands out as consistently being a principal factor in the adoption of new technology. Scholars, Al-Shohaib, Frederick, Al-Kandari and Dorsher (2010) found that this attribute facilitated the diffusion of Internet technology among private sector professionals. This finding is consistent with Rogers (1995) who argued that a perceived relative advantage in the form of greater efficiency and lower costs should influence private sector adoption of the Internet. Researchers have been criticised for this work's general nature, which makes the construct too vague, gives too broad a connotation to measure effectively. As a result, many IS researchers have reduced relative advantage to be more domain and environmentally specific (Slyke, Johnson, Hightower, & Elgarah, 2008). For example, within a business computing domain, the type of relative advantage that matters most was 'usefulness', i.e. the extent to which employing the innovation would contribute to overall improved job performance. In an Internet banking context, consumers may perceive a relative advantage over branch banking in the ability to access their accounts from any location, any time, in addition to greater control and flexibility in managing their accounts (Podder, 2005).

Karahanna, Srite and Galvin (2002) mooted that researchers often interpret relative advantage and perceived usefulness as conceptually equivalent. Venkatesh, Morris, Davis, and Davis (2003) include the two as the same construct in their united theory of 'acceptance and use of technology model' but have called it 'performance expectancy', and defined it as the degree to which individuals believe that using a system will help them improve their job performance. However, Carter and Weerakkody (2008) have expressed the belief that there may be conceptual distinctions between the two constructs. Relative advantage may refer to the use of web technologies as a preferred means of interaction, while perceived usefulness may refer to the actual usefulness of online services. Many

researchers find low discriminate validity between these scales and indicate that there is high degree of overlap between the two concepts.

Relative advantage has been found to be an important motivator or factor in encouraging citizen participation in the adoption of e-government. The phrase refers to the anticipated advantages e-government services can provide to all. Receptivity towards e-government services comes about when the new system is perceived to be more beneficial and efficient than over-the-counter services. One of the primary purposes behind the introduction of e-government services has been to facilitate the ability of public organisations to capitalise on their IT sophistication and to provide citizens with a higher level of convenience in their interaction with government. The degree of relative advantage can be measured by economic profitability (for organisations), social prestige for the public, or its improvement of business efficacy (organisations) among others (Tung & Rieck, 2005). Citizens may adopt the new paradigm if they find that it saves them time and money when accessing public services (Altameem, Zairi, & Alshawi, 2006). Carter and Belanger (2004) found that relative advantage is one of the important constructs when predicting public uptake of new online services. They advised government agencies to identify and communicate with potential users about the advantages of using online services as opposed to other means. For example, public agencies could encourage the adoption of online dog license renewal by emphasizing its convenience and speed compared to the traditional method of visiting the local council office. They can highlight benefits such as the fact that citizens can complete their online license renewals whenever and from wherever it is most convenient.

### **3.2.5 Trust**

Studies of online behaviour emphasise the importance of trust in technology adoption models (Gefen, Rose, Warkentin, & Pavlou, 2005). Trust can be defined as a user's expectation that an individual or organisation can be relied upon to deliver on their proclamations and is the cornerstone of any successful business relationship. Trust is a dynamic process that builds over time and largely determines the customer's future behaviour and loyalty towards the business (Wahab, Noor, & Ali, 2009). It is mandatory when risk is present and is the foundation of any transaction that takes place between two parties. It has been argued that online trust is built through a belief in the integrity of the organisation and the reliability of the Internet (Gefen, Karahanna, & Straub, 2003; Welch & Hinnant, 2003). 'Trust of the Internet' includes trust in the security features and performance structures of any given electronic portal (Schaupp & Carter, 2010). Researchers suggested that e-businesses customer's 'distrust' perceptions must be

overcome if organisations want to succeed. The open nature of the Internet as a backdrop to transaction infrastructure and its global jurisdiction has made trust a crucial element of e-commerce. In an examination of online tax services, Warkentin, Gefen, Pavlou, and Rose (2002) found citizen trust as one of the underlying catalysts for adoption of any new technology. Gummerus, Liljander, Pura, and Van Riel (2004) mentioned that this lack of trust has been one of the most significant reasons given for customers shying away from online services involving financial exchanges. Floh and Treiblmaier (2006) identified that in addition to trust, satisfaction is an important antecedent of customer loyalty in relation to any electronic service, more particularly Internet banking. Prior literature has also conceptualized trust as a valuable corporate knowledge asset (Schaupp & Carter, 2010; Wahab et al., 2009).

Although there is little agreement in the literature about how to define public trust in government or how it is gained or lost, most scholars agree that it is an important determinant of public action and cooperation, and that it has been declining for a number of years (Z. Al-Adawi et al., 2005). Researchers have studied the issue of trust from many angles. For example, Ebrahim and Irani (2005) highlighted the importance of trust in widespread acceptance of the new governance paradigm. Deakins and Dillon (2002) and Al Sawafi (2003) believe that users' trust in e-government is inextricably linked with security and privacy assurances given to users by their service providers. Citizens may be reluctant to use e-government services unless they are confident that any information they supply in the digital medium is subject to strict security and privacy. Al Sawafi goes on to say that trust in digital technology requires a reliable, stable and up-to-date system of embedding digital signatures. Even when e-government brings a certain level of transparency to governance activity and offers an additional channel for servicing, some remain suspicious of IT and its use in relation to governance (Colesca & Liliana, 2008). Carter and Weerakkody's (2008) study focused on new users' initial trust, i.e. a hope that the benefits promised will be delivered upon. These researchers argued that initial trust is necessary in a relationship where citizens do not have the ability to directly observe the service provider's behaviour. This visual insurance has been relied upon for centuries but is no longer available. On a similar note, Chen and Barner (2007) found both initial trust delivered upon and familiarity with the online purchasing process have a positive impact on purchase intention.

The IT literature on trust has emphasized that perceived organisational trust-worthiness and trust that technology will deliver are two important determinants of how the public will

react to e-government initiatives (Belanger & Carter, 2008). How that trust is built has some unique challenges because of the relatively impersonal nature of the online environment, the extensive use of technology and the inherent uncertainty of using a perceived open infrastructure. These unique qualities can decrease the public perceptions of control and increase their hesitation over adopting e-government. A low level of citizen trust in a government organisation and of the Internet can lead to public indifference to e-government initiatives. On the other hand, a low level of trust of the government coupled with a high level of trust in the Internet can lead to unpredictable and sporadic results. But a low level of trust in the Internet with a high level of trust in the government would promote a scenario where the citizens will try to cooperate with the government efforts, but the lack of trust in the technology will inhibit this positive outcomes for all concerned (Colesca & Liliana, 2008).

### **3.2.6 Importance**

The emergence of e-government as a distinct public management phenomenon is taking place in most countries across the world. In recognition of the importance of social and economic opportunities associated with Internet-based capabilities, governments throughout the world are investing in the development and implementation of a wide range of online services (Grabow, Druke, & Siegfried, 2011). It has become important to developed and developing countries because of the strong links between competitiveness and economic growth (World Bank, 2002). e-Government is regarded as an important tool to achieve public participation and greater efficacy in administration for public organisations. From the citizen's perspective, the advantages of e-government include faster transactions, greater flexibility, higher availability and more convenience. However, the importance of e-government to citizens may lie in its ability to enable citizens to contribute to and monitor the activity of their public authorities, participate politically and collaborate with government, fight against corruption, and experience effective local community policies through improved government reporting, partnership and consultation with various stakeholders (Clinton, 2009; Njuru, 2011; Pleming, 2009).

Although the benefits of local e-government are often thought to be small – the potential for informed and communicative politics are considerable. The most important benefits are the improvement of the information base, increased efficiency in political work and greater intensity of communication between citizens and their governments. Van Dijk, Peters and Ebbers (2008) held that e-government acceptance should be seen as part of a dynamic

learning curve whereby people will remain using traditional channels unless they learn and experience the digital channel's added value over traditional channels.

### **3.3 Organisational factors in e-government implementation**

The organisational factors that potentially affect e-government implementation initiatives are discussed in the following sections.

#### **3.3.1 Strategy**

Technological evolution provides potential opportunities for faster delivery of services and cheaper and effective communications between individuals and businesses. A variety of e-government initiatives have been undertaken to improve the efficiency and effectiveness of internal government operations, communications with the public in general and transactions with citizens (Kumar, Mukherji, Butt, & Persaud, 2007). With the arrival of e-government, an element of uncertainty is introduced because users are required to use the perhaps unfamiliar channel in order to communicate, collaborate, and transact beyond traditional organisational barriers, transcending the more familiar, trusted face-to-face interaction. Shahkooh and Abdollahi (2007) argued that e-government is more than just applying IT to reform and improve government processes, therefore promotional strategies need to focus beyond mere technological changes. Simultaneously, the strategy must outline initiatives that the governing bodies need to undertake for simplifying public administration procedures, reducing bureaucracy and promoting public participation in political processes. The potential benefits of e-governance need to be clearly and positively communicated to a wide range of stakeholders. For the public, the 'benefits' refer to a wider choice of delivery channels, convenience, lower transaction costs, better personal services and greater openness. For service providers, it means reduced transaction costs, better inventory management and shared data environments. A survey in the UK identified 15% of local bodies had a separate strategy for developing e-government, 19% said e-government was part of a wider corporate strategy, while 29% expressed that it was already a part of their existing IT/IS strategy and 12% said that their organisation had no e-government strategy (Feng, 2003).

Ebrahim and Irani (2005) highlighted the importance of e-government strategy and stated that it is a fundamental element in modernising the public sector, through identifying and developing organisational structure, the ways of interactions with citizens and business, and reducing cost and layers of organisational business processes. In addition, e-government strategy is enabling public sector organisations to interact directly and work better with

businesses, assist in creating an IT infrastructure needed to support the new service delivery channel. One of the major barriers for any e-government development program is the creation of an applicable and context-tailored promotional strategy. Every initiative needs to be rooted in a very cautious, critical and dynamic strategy (Ndou, 2004). Several studies have compared e-government adoption between countries and have identified various issues in government initiatives that have put some of the countries ahead of others. The understanding of the public's need for information and how they access this information is commonly used to formulate recommendations for the development of e-government strategies.

Canada was found to be a leader in e-government adoption. The success behind the Canadian e-government was that government's e-strategy, which took in to account the needs of its citizens, businesses and the international community and tailoring their provision of these services to meet those requirements (Kumar et al., 2007). By transforming its service delivery approach, it was perceived as being better in tune with its potential users, while attaining operational efficiencies (Accenture, 2004) and continues to receive accolades on the smooth transition. The key elements of the UK's e-government strategy includes making it easier for business and individuals to deal with government, enabling government to offer improved services and information through new media and facilitating efficient communications between government departments so that people do not have to be asked repeatedly for the same information by different service providers (Ebrahim & Irani, 2005).

In Asia, the South Korean government has developed and published a sophisticated national e-government strategy that includes the goal of universal access for its citizens and widespread participation in government (Curtin, 2007). South Korea was found to be the top nation in e-government readiness survey conducted in 2012 by the United Nations (2012).

In Oceania, the Australian e-government strategy commenced in 2006 and included meeting users' needs, establishing connected, efficient service delivery, achieving value for money and enhancing public sector capability (AGIMO, 2006). New Zealand began its e-government strategy in 2001 and this was enhanced in 2006. The long-term goals were establishment of New Zealand as 'a world leader in e-government' (SSC, 2001). The New Zealand government's strategy has four key themes – provision of easy online access to information and services, development of innovative products and services, enhancement

of citizen's participation in local democracy and provision of community leadership in e-business initiatives.

Shahkooh and Abdollahi (2007) proposed an e-government strategy model that encompasses government direction and management attitudes on e-government initiatives and recommends changes in strategic levels, including information and data, culture, marketing, technology, management, finance, security, logistics, human resources, legality and technical infrastructure. Al-Adawi and Morris (2005) proposed a set of strategic levers for e-government practitioners that are intended to transform a citizen from a curious observer or information seeker to a confirmed, confident user of e-government services (Z. Al-Adawi et al., 2005). Some long term goals, such as the amalgamation of governing bodies and a more citizen-centred approach to the provision of services, require the breakdown of traditional barriers within and between government organisations (Feng, 2003). Further, governments will need to overcome challenges or barriers while implementing their strategies, and these include a) developing a strategy that is realistic in both scope and workability; b) setting objectives and goals to be achieved; c) understanding the public's information requirements; d) ensuring the availability of financial and human resources; e) building continuous support from the political and administrative authorities; and f) identifying the skills required for managing implementation. Feng (2003) indicated that governments need a change management strategy that recognises the social, cultural, organisational, human resource and technological issues involved in managing organisational transformation for e-government.

Effective strategy requires that an organisation's IT/IS goals are aligned with the organisation's wider corporate and business goals, and that planning is tied to this framework (Rezaei, Asadi, Rezvanfar, & Hassanshahi, 2009). Several studies have found that goal alignment is the strongest predictor of IT usage or IS success in the public sector (Ang, Davies, & Finlay, 2001; Hussein, Selamat, Anom, Karim, & Mamat, 2005). e-Government typically involves combining the processes of different functional units within an organisation or those of several government organisations into one e-government portal. Such a portal will need to meet the goals of all stakeholders, and this alignment is often difficult to achieve. Lack of agreement on the goals and priorities between agencies can be a major barrier in cross-agency e-government initiatives (Gil-Garcia, Schneider, Pardo, & Creswell, 2005; Gil-Garcia, Smith-Chengalur, & Duchessi, 2007).

Nour, Abdelrahman, and Fadlalla (2008) have also suggested that effective e-government initiatives must take into account the diversity of government systems, economic conditions, cultures, socio-political factors and technological infrastructures, which collectively represent the context within which all e-government initiatives are undertaken. Each of these strands provides important insights into a specific aspect of e-government. One strand refers to the values to be integrated into e-government including efficiency, transparency, service quality, integrity, citizen empowerment and many more. Another strand addresses another set of values that encompasses privacy, security, the 'digital divide', accessibility, citizen awareness and confidence. The success of e-government initiatives depends on a match between the outcome of these strands and the organisational goals. In other words, if context is ignored e-government goals are not attainable within their given context.

The success of e-government initiatives in achieving their targets may depend, crucially, on congruence between the goals these initiatives seek to achieve and the underlying contextual environment within which these initiatives are undertaken. For example, an initiative that aims to achieve transactional efficiency may not be successful in an environment characterised by limited computer access, slow data speeds, and low levels of human capital (Nour et al., 2008). Governments will also face difficulties in assessing whether or not goals are achieved unless some measurement system is in place (Nour et al., 2008). The public organisation often faces a set of barriers that are specific to local government as opposed to the private sector and this can create an environment in which decisions are made that are in contradiction to the overall goals of the organisation. In this scenario, the perceived vagueness of public organisational goals can be the result of compromises made by leaders or the top management.

### **3.3.2 Collaboration**

Ke and Wei (2004) suggested that every governmental body must realise that they do not operate in a vacuum. They are there to serve the common good and that cannot be achieved without working in tandem with the public that has elected them. These researchers suggest a holistic approach, with a common goal and sharing of resources rather than discrete units often running disparate agendas. Collaboration is defined in many ways in the relevant literature but a common theme is the interdependence among participating agencies that choose to combine their efforts in order to achieve better outcomes. There is also consensus in this literature that effective collaboration requires mutual understanding and trust between participating agencies. The pay-off for these

collaborating agencies will be improved efficiencies and financial savings for all stakeholders (Altameem et al., 2006).

Pro-active leadership is widely seen as a critical ingredient in uniting participating agencies and guiding them through the rough patches during the period of collaboration. Vangen and Huxham (2003) argue that in order to promote collaboration, leadership must set and maintain clear ground rules, build trust, facilitate dialogue and explore and communicate mutual gains. Dawes and Prefontaine (2003) indicated that maintaining effective collaborative relationships among multiple agencies requires employees of all the partners to work seamlessly in a coordinated fashion, exchanging ideas and knowledge through joint problem-solving activities. Participants in an inter-agency collaboration may be quite diverse; requirements that appear trivial to some participants can be major impediments for others. However, the outcome of inter-agency collaboration needs to be compatible with everyone's objectives and should not extend beyond anyone's mandate (Klischewski & Scholl, 2006) or introduce threats to anyone's autonomy (Fountain, 2001). Further, the partnering agencies need to provide the motive, opportunity, and structure to carry out radical and complex changes required for e-government implementation.

Working across the boundaries of organisations, sharing time and resources and addressing issues across jurisdictions have been found to be effective elements in e-government collaboration. Many scholars have expressed that inter-agency collaboration is not only complex in government organisations because of their silo management structures but contentious too, as it needs to act in a manner that runs counter to the formal and traditionally accepted ways of operating (Allen, Juillet, Paquet, & Roy, 2005). In other words, the new collaborative culture creates a need for overhauling and flattening the structures of traditionally hierarchical institutions. One of the most challenging factors in e-government implementation is the digitally enabled collaboration and cooperation among different government agencies. Akbulut (2003) found that information sharing between agencies that use the same kind of data is limited due to unsafe communications, out of date information, huge costs of maintenance, conflicting data definitions and the use of different terminology. Gil-Garacia et al. (2007) found that political principles can be a barrier to information sharing, as the strategic value of that information can be perceived as outweighing any purported benefits. The clear guidance of a legal framework for information sharing might potentially mitigate any reservations on information sharing. On the other hand, open access to government information may, unless strict security protocols are put in place, leave sensitive data vulnerable to misuse. A survey conducted by

central government departments in the UK revealed that legal uncertainty was a more of a concern for public organisations than technical or financial issues when considering information sharing (PIU, 2002).

Stanley and Weare (2004) have found that differing levels of adaptability and bureaucratic rigidities hampered cross-agency collaboration. Smaller constituencies or countries with minimum levels of government have been found to have an advantage in cross-agency collaboration (Faerman, McCaffrey, & van Slyke, 2001; Pieterse, et al., 2007) due to fewer parties being involved. For example, Singapore with a single-level government has been successful in implementing e-government compared to many other countries. However, studies have found that even large and diverse groups are more inclined to collaboration when appropriate interactive systems for fostering and mediating the planning and implementation process are employed (Navarrete, Gil-Garcia, Mellouli, Pardo, & Scholl, 2010).

Power imbalances between participants are another common problem found in cross-agency collaboration. If participants in a collaborative network do not have the capacity, status, or resources to participate or if they are not able to participate on an equal footing with other participants, then the collaborative process is likely to be manipulated by the stronger actors (Ansell & Gash, 2008; Navarrete et al., 2010). In order to overcome this, some researchers have suggested that there must be ground rules in place to define membership and participation in a collaborative network and the legislation must be in place to support these rules (Scholl, 2005). Ansell and Gash (2008) added that processes must be open and inclusive of all participants who are affected by the e-government initiatives.

Local governments provide many services to different types of residents that require different systems, depending upon their roles. For example, the building consenting and licensing department provides services different from those provided by the library or transport department and their customer-base may be different. As this study focuses on identifying the local government position in vertical (own departments) and horizontal (other governments) integration, it also requires studying factors impacting collaboration.

### **3.3.3 Management support**

High-level management support has been found to be the most frequently mentioned factor for successful implementation of IT solutions and IT adoption. It refers to the

degree to which top management understands the importance of the IS function and the extent to which they are involved in IS activities. Top management support has been much researched in diverse IT/IS implementation settings and it has been found that without support from the top management, an innovation is less likely to be adopted, especially, in an inter-organisational information system (Al-Qirim, 2007; Altameem, et al., 2006; de Corbière, 2007; Teo, et al., 2009).

Lewis, Agarwal and Sambamurthy (2003) highlighted that if employees see their top management enthusiastically employing and promoting new technologies throughout the organisation, a sense of legitimacy is developed and employees see that the new technologies as a viable option for themselves and their work practices. Studies carried out in Malaysia have shown that the top management support is very influential in ensuring the success of the implementation of the Internet, public management information systems, ERP and Accounting Information Systems (AIS) (Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Cipre's, & Boronat-Navarro, 2004). Without this top-down support, individual agendas are imposed which work against stated goals and thwart the introduction of much needed innovation (Kearns, 2006). In a study of large innovative organisations, Kamal and Themistocleous (2006) reported that invention would emerge continuously in such an environment, because top management would appreciate creativity and contribute pro-actively to promote the stated value system. According to 'Transformational Leadership Theory', leaders are the agents of change, i.e. they initiate and implement new directions within organisations. They manage changes through a three-act process: the recognition of the need for change, the creation of a vision, and then the implementation of changes (Burns, 1978). Top managers will motivate their employees to be creative and to perform at their best. Teo, Lina and Lia (2009) found the benefits of top management support and commitment is critical for e-procurement adoption in Singapore. In another study, Al-Qirim (2007) analysed the adoption levels of e-commerce in New Zealand and his results showed that the receptive behaviour of the Chief Executive Officer had a major influence on many e-commerce technology adoptions within small to medium-sized enterprises. A study on e-commerce adoption in Denmark and Australia by Scupola (2009) found that the successful adoption and implementation of technological innovations within organisations is often related to the support of top management.

Kumar, Mukerji, Butt and Persaud (2007) also reported that high-level support for new paradigms was an important factor at all levels of an organisation. In some cases, implementation of e-government requires statutory/ regulatory or policy changes, which

are unlikely to happen without the support of top management. In studies of internal usage of e-government, scholars have found that top management support is an accurate predictor of the successful adoption of e-government (Gupta & Sahu, 2007; Ho, 2004; D. F. Norris & Moon, 2005). Further, top management support for information security was found to positively influence a culture of security and policy enforcement (Knapp, Marshall, Rainer, & Ford, 2006). Altameem et al. (2006) emphasised that strong leadership is one of the critical pre-conditions upon which e-government success hinges. The authors recommend that e-government needs a leader who can put e-government onto the agenda, set it within a broader reform agenda, and who can make it happen. In other words, the top leaders must be the change agent; they should initiate the transformation, provide the oversight, and approve the proposed changes and new business rules. Burn and Robins (2003) expressed that positive attitudes and a commitment from top public officials is required to support the scale of changes required during the implementation of e-government.

#### **3.3.4 Organisation culture**

Organisation culture can be defined as the level of loyalty and mutual trust that is built among the members, that holds an organisation together (Cheung, Wong, & Wu, 2010). It gives the organisation its identity and shapes the behaviour of its members. Burn and Robins (2003) pointed out that organisation culture emerges as the result of continuing negotiations about values, beliefs, standards and assumptions between the members of an organisation (Altameem et al., 2006). Organisation culture represents a level of concordance in the basic assumptions that are believed to be non-negotiable and non-debatable (Cheung et al., 2010). Titah and Barki (2008) said that the differences between cultures can help explain the myriad design and information sharing modes that are found in public organisations. Although there are no universal definitions of organisation culture, its impact and influence on function and change initiatives is evident in the relevant literature (Sun, 2008). Studies explored the idea that any given organisation culture could have powerful consequences, especially when they are conducive and enduring. It can have a powerful positive impact on individual and organisational performance. A strong culture is therefore one where implicit and explicit assumptions are synchronised (Cheung et al., 2010).

An organisation culture that is encouraging creates an open, flexible, learning environment in which technology adoption and organisational change can take place with equanimity (Altameem et al., 2006; Coursey, Welch, & Pandey, 2005). Effective implementation of new

technology occurs when the organisation culture is particularly entrepreneurial, innovative and not burdened by excessive attention to procedures and rules. Adenfelt and Lagerstrom (2006) found that a positive organisation culture is the main enabler in enhancing knowledge management in trans-national projects. Atkinson, Crawford and Ward (2006) suggested that an organisation needs to pay attention to its culture and build into its infrastructure a certain level of flexibility in order to successfully manage uncertainties within projects. Marrewijk (2007) highlights the danger of a cultural mismatch when the business model of an organisation changes.

Studies have measured organisation culture in various ways. For example, the work of Hansen and Wernerfelt (1989) suggested that organisation culture could be measured by the employees' capability to identify and accomplish organisational goals. Woodcock (1989) measured culture by the extent that the employees are encouraged to improve their skills in order to achieve higher levels of performance. Denison and Goelzer's (2004) model of organisation culture is based on traits that have been shown to have a strong influence on organisational performance: (i) involvement, (ii) consistency, (iii) adaptability, and (iv) mission. In contrast, Cameron and Quinn (1999) defined six indicators in assessing organisational culture, including: (i) dominant characteristics, (ii) organisational leadership, (iii) management of employees, (iv) organisational goals, (v) strategic emphasis, and (vi) criteria for success. The success of an organisation culture can also be evaluated by the extent to which the leader is effective and the organisation is growing (Cheung et al., 2010). Organisation culture may become a barrier in the innovation process, as transformation of organisation culture is a slow process. Parker and Skitmore (2005) found that dissatisfaction with organisation culture is the primary cause of project management turnover.

The complex bureaucracies of government are patterned on the hierarchical models that grew out of the industrial age, with a strong emphasis on rules. This slow and costly approach of government has perpetuated itself over the decades and the challenge is to change a culture that is rooted in a legacy of 'standard operating procedures' to one that is flexible and more responsive to its constituents. Studies have been conducted on the impact of organisation culture on successful e-government, and scholars have argued that the most difficult challenge to manage in e-government is the necessary culture change involved in providing services online, since it involves a change in employees' roles and attitudes (Altameem et al., 2006; Moon & Norris, 2005). Khademian (2002) explained that building and maintaining an effective organisation culture is essential for achieving

successful e-government reform initiatives. Moon and Norris (2005) found that e-government initiatives are adopted with more ease and less resistance if management is entrepreneurial and receptive to innovation. In particular, governments that implement managerial innovations more actively may have a strong innovation culture, making them likely to adopt e-government initiatives more easily and with less administrative resistance.

Several studies have suggested that organisation culture may also work as a predisposing factor. Organisations which have long histories of change and innovation can be expected to be the front-runner in e-government, whereas others who remain stuck in their old ways may be slower adopters of e-government. For example, a study of local governments in Norway, Denmark and Finland found that these countries have enhanced receptivity for e-government adoption because they had a history of carrying out changes continuously (Baldersheim & Orgard, 2008). On the other hand, a study by Shin, Song and Kang (2008) found that an inflexible, entrenched management culture had a negative influence on the overall success of e-government. The researchers explained that this outcome could be due to the respondents in developing countries considering innovative changes as a threat to an existing power-structure which controls decision-making processes and resource allocation for the e-government initiatives. Heeks (2001) pointed out that employees may have a vested interest in maintaining their little piece of these existing power structures.

### **3.3.5 Financial resources**

Commonly, low cost technologies are adopted in public organisations because government organisations are often focused on minimising the use of taxpayer or ratepayer funds. Akubulut (2003) mentioned that if the introduction of new systems are not reinforced by incentives they are likely to lose the support of stakeholders. Governing bodies require substantial financial investments in order to provide adequate technical infrastructure, systems development, maintenance and personnel training for e-government initiatives (Alguliev & Yusifov, 2009 ). It is expected that this investment will bring tangible benefits for the establishment of e-government (Schwester, 2009). In the absence of discernible profitability or return on investment, the cost of implementation might be the single most important variable for the public sector (Akbulut, 2003). However, larger organisations with a greater financial pool may be less concerned about the costs of adoption of a new technology because of their ability to generate higher, relevant forms of organisational slack. For small to medium sized organisations it may not be possible to absorb potential shortfalls (Moon & Norris, 2005).

The e-government initiative can be funded in a variety of ways including from user fees, financing through a general fund, and public-private partnerships. The financing options may rely on a single funding stream or a combination of funding streams. Moon and Norris (2005) found an association between political and financial capacity and concluded that financial resources for e-government are readily available if there is visible political support from elected officials. Further, strong pro-active leadership can ensure a long-term commitment of resources, create new revenue streams, and unify different factions so that they collaborate and support e-government initiatives (Bjørn & Fathul, 2008). In many cases, the major funding stream for the implementation of e-government initiatives tends to come from central government. This can introduce an element of uncertainty as funding becomes dependent upon the economic condition of the country. Besides this, many e-government initiatives in developing countries are dependent on funding from international sources, such as the UN, the OECD, and aid agencies from developed countries. This makes them vulnerable when the subsidies come to an end and subject to pressures that projects in developed countries are not (Bjørn & Fathul, 2008).

Reddick (2004) commented that the pace in which government will transition from initial to more advanced stages of e-government will depend on how effectively agencies handle implementation challenges, especially their financial resources. The rate of progress through development and implementation of e-government was found to be different for different countries and between states in multi-state nations. For example, some states in the USA are moving strongly ahead in transferring information and services online, while others lag, as their funding sources do not match their goals (Viana, Roland, & Rhoda, 2005). Moon and Norris (2005) reported that many e-government programs in the USA ran into great difficulties because they had little or no financial resources. Another study, reported that a lack of financial resources is a major barrier for e-government adoption for 45% of government organisations in the USA (Ebrahim & Irani, 2005). Despite financial and other limitations, many municipal governments have had no choice but to continue to pursue e-government initiatives and have made progress in setting basic e-government functions in place (Ho, 2002; Moon, 2002). This could be because simple e-government implementations – such as the creation of a government website or the establishment of one-way communication with citizens, do not require large financial resources. Alguliev and Yusifov (2009) compared the transformation of public organisations towards e-government in developed and developing countries and opined that most of the developing countries have greater financial limitations that hamper the development of e-government. Although some of the developing countries are moving ahead in e-government

implementation, progress is inconsistent due to limited financial resources for developing an infrastructure that will adequately service their vast populations.

### **3.3.6 Human resources**

The adequacy of skilled human resources is critical for the success of IT adoption. The literature reveals that the full potential of IT could not be tapped in most organisations due to lack of IT staff or expertise. The shortage of qualified professionals in the IT field is found to be problematical world-wide, and the growing demand for these professionals has put government organisations in direct competition with the private sector for technical human resources. The turnover rates of IT staff from public organisations, in general, are higher than in the private sector because public agencies cannot compete with the salaries an open market can provide, are overburdened with constrictive bureaucratic structures, have no transparency built into their work systems, and can provide little in the way of inducements for their public servants (Reddick, 2009). Public organisations, therefore, need to emphasise the development of competitive salary structures, training and career development opportunities for their staff. The rate of turnover intensifies with the economic growth of a country. The main driver of the perceived IT skills shortage can be put down to the growing importance and usage of Internet technology, telecommunication and infrastructure, as well as the increasing integration of Internet technology into business processes. Developing countries face a greater challenge as their educational systems are not always able to meet the need for skilled IT professionals.

United Nations reports on IT and e-government projects have identified an institutional shortage of qualified personnel and lack of IT training programmes as core predictors of failure of e-government projects in developing countries (Bjørn & Fathul, 2008). Several e-government readiness assessment studies have been carried out to measure the organisational capacities that are deemed essential in order to succeed in the e-government development process, and a human capacity index is found to be one of the three key factors to gauge an organisation's readiness (Srivastava & Teo, 2007). Although many government organisations have IT staff, they do not have the training required to meet the new technological challenges associated with e-government. These desirable skills are not restricted to technical skills. For example, a manager requires a broad skill set to engage in e-government decision-making. Developing countries face the additional challenge of losing their trained personnel to developed countries. The shortage of skilled personnel that can enable the adoption of new technology is found to be an issue and the problem intensifies within inter-governmental projects (OECD, 2003). This uneven allocation of

skilled personnel has resulted in erratic rates of development of e-government systems world-wide (Ebrahim & Irani, 2005; Schwester, 2009; Viana et al., 2005). Viana et al. (2005) suggested that organisations with staff who are more familiar with the Internet are more likely to be aware of the bigger picture, i.e. long-term benefits of the new paradigm. Governments require robust systems offering 24/7 services in addition to well-trained staff who can facilitate and maintain citizens' participation and use of e-government services (Blount, 2008). If employees are unwilling to change their way of thinking, it is difficult to capitalise on the advantages of e-government. An educated and trained citizen has also been identified as a major enabler of e-government. Srivastava and Teo (2007) argue that human resources act as object and subject in e-government implementation, hence their ability in IT should be improved through relevant training continuously to ensure a continued pool of IT knowledge available at all time.

### **3.3.7 Organisation size**

The size of the organisation has been found to be a major variable in the IT innovation adoption literature (Basoglu, Daim, & Kerimoglu, 2007; Ho, 2002; Moon, 2002; Moon & deLeon, 2001). It has been found that larger organisations possess greater resources and more scope for trying new ideas and therefore adopt new technologies and innovations more frequently than smaller ones (Moon, 2002; Moon & deLeon, 2001). Large organisations also have levels of slack in human and financial resources built into their structure that can absorb the risks of possible failure, and are thus found to be willing adopters of high cost innovations. Lee and Xia (2006) found that larger organisations tend to be associated with a greater differentiation, greater formalisation, more decentralised managerial decision-making structures, greater levels of task specialisation and more complex forms of communications. Gibb and Harr (2007) explored the idea of organisational size as a moderator and found it had a significant impact on IT competency and development performance. These researchers argued that as a business increases in size, its task coordination may become more complex and therefore its reliance on the movement of information might increase, hence increasing the need for new IT.

Zornoza et al. (2004) have analysed the data from 53 studies and identified a positive correlation between size and IT innovation. Although smaller organisations are more flexible and their processes less bureaucratic, they face resource constraints in implementing innovations (Ifinedo, 2007). In contrast, Lee and Kim (2007) argued that innovation often requires close collaboration and coordination and that can be achieved more easily in small organisations. However, this relationship between the organisation size

and technology adoption was reported as not being uniform across different industries. Some studies have suggested that the correlation between organisational size and innovation adoption is lower for non-profit organisations (Teo & Pian, 2004). Further, smaller companies experience more knowledge and financial constraints than larger firms during innovation adoption which may force smaller organisations to assume an incremental approach to IT investments, which, in turn, may result in isolated and incompatible systems (Laukkanen, Sarpola, & Hallikainen, 2005). Companies of different sizes also tend to have dissimilar priorities and schedules for technology implementation. For example, smaller companies are more likely to change their processes to match a newly implemented system whereas larger companies are more likely to customise the system.

Some researchers are of the opinion that larger organisations generally have redundancy built into their systems, which positively affects the extension of e-government, since large amounts of resources need to be committed to implementation of e-government initiatives (Camisón-Zornoza et al., 2004). Moon (2002) studied the effects of organisational size and characteristics on IT adoption in North American local bodies and have concluded that “...a positive association may exist between size and the level of e-government adoption...”(p. 430). West (2004) pointed out that larger cities may spread the costs of new technology over a larger population and tax base, which means larger governments are more likely to be early adopters of e-government. Some empirical work has shown that e-government initiatives succeed with more regularity in larger public organisations than in smaller ones (Heintze & Bretschneider, 2000). Several studies have carried out website analyses and found a significant correlation between population and e-government involvement. Holden et al. (2003) presented statistical evidence that indicated organisational size positively impacts the adoption of e-government in the USA. Moon and deLeon (2001) pointed out that larger municipal governments are sensitive to external pressures to increase efficiencies in local government and have a strategic advantage in the development and implementation of e-government. A survey of Texas state agencies by Reddick et al. (2006) showed that once e-government initiatives have been implemented, the size of state agency does not influence overall effectiveness. Nevertheless, based on the aforementioned empirical evidence, it seems that organisational size has a positive influence on e-government implementation and that the number of citizens managed by a local government is a measure of its size.

### **3.4 Environmental factors in e-government implementation**

Relevant environmental factors in e-government implementation are discussed in the following sections.

### **3.4.1 External pressures**

The extant literature has highlighted external pressure as an important environmental factor in the adoption and implementation of e-government. External pressure can stem from a variety of sources, including the business sector, customers and competitors. If an organisation's competitor or supplier adopts a new IT innovation, the non-adopting organisation feels pressure or be pressured to adapt to the new environment by also adopting the innovation. This pressure is perceived to originate in the perception that early adopters of innovations will have certain competitive advantages. The intensity of this pressure and need will be instrumental for adoption of similar technological innovations by the non-adopter (Chwelos, Benbasat, & Dexter, 2001; Masrek, Jamaludin, & Hashim, 2009). After analysing the success and failure rates of IT projects, Gichoya (2005) concluded that the absence of external pressure indicates failure, while its presence is a motivating force for successful implementation. Several studies have found increased external pressure has been a major influencing on organisational adoption of innovation, including e-marketplaces (Joo & Kim, 2004), ERP systems (Vluggen, 2005) and mobile Internet (Van Akkeren & Harker, 2003). Mehrtens, Cragg and Mills (2001) carried out a case study on small Australian firms and found that external pressures from customers and suppliers significantly affected the level of Internet usage when conducting business. Other researchers found, in a study of electronic data interchange, that external pressures to adopt this innovation came from a company's trading partners (Chau & Hu, 2001). Studies of Internet-based systems found external factors such as customer concerns and the frequency of customer's requests, combined with competitive considerations, created pressure on firms to adopt this technology (Mookherje & Ray, 1991).

Although public organisations exist within an environment subject to political pressures, some are more politically exposed than others. Inter-governmental pressure such as funding, transfers, and technical assistance have been found to be significant factors in the adoption of innovation by local governments. As constituents become familiar with new online service delivery in other areas, such as banking and shopping, they will exert pressure on their governing bodies to provide government services online. The first response is often a website that allows image building and a portal for announcements of future changes (Borris, 2000; D. Evans & Yen, 2006; Irani, Love et al., 2007; Layne & Lee, 2001; Paris, 2005; Reddick & Frank, 2006). In Canada, external pressure manifests itself mainly in the form of feedback from citizens who demand access to government information in order to ensure government accountability (Park, Lamontagne, Perez,

Melikhova, & Barlett, 2009). Citizens have placed similar pressures for e-services on state governments in the western USA (Reddick, 2004). Weerakkody et al. (2007) concluded that external pressures, including policies and politics, can have a major effect on the outcomes of e-government initiatives. External pressures have two general effects: they provide the impetus for e-government implementation, and they provide managerial justification for internal demands advocating structural, procedural, and behavioural alterations – changes that may not otherwise be possible (Weerakkody et al., 2007). Moon and deLeon (2001) pointed out that larger governments with more stakeholders, experience more external pressures to make more efficient e-government implementation.

### **3.4.2 Legal issues**

Government organisations, in general, operate by virtue of specific, formal groups of rules. In making any kind of decision, including those in IT projects, public managers must take into account a large number of legal issues. A legacy of proscriptive and out-of-date legislation and regulations can restrict innovation within governmental structures (Berr, 2008). Some of the most challenging legal issues arise from the migration from a model of centralised, bureaucratised, paper-based, impersonal, rule-based and disconnected administration to a decentralised, digital, personalised, client-focused, and interconnected model (Schultz, 2009). Laws and regulations relating to government interactions with citizens can be major obstacles for providing services that are feasible and logical from a technical, organisational, and citizens' point of view. Further, the legal restrictions on data sharing between agencies, can pose difficulties for data integration between administrative and regional entities. The policies covering public access to government information and transparency are yet to be developed fully except for in a few countries. For example, Sweden, Denmark, Finland, Ireland and Portugal have a legislative framework that already covers the transfer of information (Paskaleva-Shapira, 2006). There is a role for central government in establishing a flexible and enabling regulatory environment for electronic transactions (Al-Qirim & Corbitt, 2004). Ivy (2007) opined that laws in many countries relating to Internet transactions suffer from two fundamental problems: 1) the constantly changing nature of technology, which has the potential to render any legislation redundant within a short period of time; and 2) national laws that are ill equipped to cope with a global issue.

Paskaleva-Shapira (2006) urged that it is necessary for public organisations to first establish legitimacy and efficiency to secure a relationship of trust between government and citizens in order to make e-government effective. The legal aspects then become part of a

government's roadmap, strategies and long-term objectives and constitute a subset of the larger task of managing the changes required to transform to a digital environment. To address the various legal aspects of e-government implementation, a comprehensive assessment of existing legal frameworks in all layers of governments is essential. This data can then be used to develop a cohesive legal framework that will meet the needs of all stakeholders, address vertical and horizontal integration, encourages citizen participation and is easy to comprehend. Back-office integration and cooperation should also be based on clear regulatory frameworks. Administrative laws too often perpetuate out-dated institutional and cultural frameworks, which can prevent back-office integration and centralisation. Setting up adequate legal and regulatory conditions for back office reorganisation has borne some positive results but federal structures and multiple levels of government can impede the process of integration (Paskaleva-Shapira, 2006).

As previously stated, the regulatory and legal framework of e-government is broad and complex, due to the wide variety of legislation, number of regulatory agencies involved and the variations in the ways that national regulatory systems are organised in different countries. Legal requirements that regulate public agencies collecting and storing citizens' information are driven by political agendas, which have a completely different set of priorities from the market regulation that informs the private sector. Privacy infringement issues make it difficult for governments to adopt targeted, personalised strategies that drive the commercial sector. The challenge for any government is to develop a clear and comprehensive legal framework that will span e-administration, e-business and e-democracy, all of which help government to improve upon its performance continuously and build public confidence and participation (Paskaleva-Shapira, 2006). Further, the legal precedents required to regulate electronic contracts and digital signatures (Schware & Deane, 2003; Scott, 2006) often do not exist or are in development and have not been tested as yet. Local governments in the Netherlands and Germany were not allowed to deliver services through the Internet as there was no legal protocol for authentication of digital signatures (Pieterse et al., 2007), while Austria had to pass several laws under urgency to operate e-government (Sonntag & Wimmer, 2003).

Another problematic issue crops up when a number of differing public organisations decide to collaborate, pool their resources and start offering different service streams from a single point of contact. Collaboration on the basis of mutual agreement is possible between municipalities, provinces, national governments and even private parties but of necessity an agreement to do so would have to comply with quite a number of regulations.

Much more importantly, new variables come into play that include hacker attacks, e-mail defamation, intellectual property losses, loss of data due to electrical failures, computer viruses, computer fraud, occupational health and safety issues, privacy and new requirements for people with disabilities which all need to be covered off. Finally, a higher level of streamlining and flexibility of rules is required for implementing e-government services in order to take account of specific IT capabilities, such as sharing information across organisational, administrative and juridical borders.

### **3.4.3 Digital divide**

As IT innovations are increasingly implemented worldwide, concerns about the potential impact of the digital divide continue to grow. The digital divide often refers to the gap between persons having physical access to digital IT and those who do not. The definition of digital divide has many facets such as access disparities in education and e-literacy that exist not only between countries and regions but also between rich and poor, between men and women, and between urban and rural areas. Mossberger, Tolbert and Sansbury (2003) identified technical competency (the familiarity required to operate hardware and software) and information literacy (the ability to parse information needed and effectively employ information resources) as highlighting the impact of the digital divide. Warschauer (2003) clarifies that digital resources (material made available online), human resources (literacy and education) and social resources (institutional and societal structures that support access to IT) can all influence a digital divide. The digital divide is also seen as the gap in the impact of IT use on an individual, an organisation or a country, exacerbated by the prevailing economic and financial conditions (Kovačić & Vukmirović, 2008). Dewan and Riggins (2005), and Norris (2001) have conceptualised the digital divide at individual, organisation and country levels that affect technology adoption.

Socio-demographical factors at play in the digital divide include gender, age, family size, family structure, education level and employment status. Researchers have found that users over the age of 60 who were perhaps experiencing a decrease in motor coordination, could also face cognitive and visual difficulties while accessing web-based services (Choudrie, Brinkman, & Pathania, 2007). A survey has found that only 17% of those aged 65 or over had used the Internet compared to 94% of those aged 16 to 24 years and 47% of those aged 55 to 64 years. Choudrie and Dwivedi (2006) found that age, gender, education level and social grade have a significant impact on use of technology and more specifically, of the computer and the Internet. Further, there is the very real possibility that many of the immigrant citizens in a cosmopolitan population may not be able to access e-government

web pages, as they will be in the English language. Mutula (2005) commented that households with higher incomes are more likely to use computers and the Internet as part of their day-to-day living, while poorer households are less likely to be connected to the digital world on a regular basis. A USA survey found that about 78% of households with income between \$50,000-75,000 had Internet access, while only 40% of those with household incomes between \$20,000 - \$25,000 had Internet access (Belanger & Carter, 2006). An earlier survey in 2001 found that about 60% of white American households had Internet access, while only 34% of African American and 38% of Latino households did (Belanger & Carter, 2006). Another study compared e-government adoption in the UK to the adoption in the USA and found that the major determinant of the digital divide in the USA is by ethnicity (Carter & Weerakkody, 2008).

Technology savvy users usually adopt a technology much sooner than those who are unfamiliar with its usage (Kovačić & Vukmirović, 2008), and limited availability of IT infrastructure may restrict individuals or households from its use (Curry & Kenney, 2006). Guillén and Suárez (2005) stated that gross domestic product, per capita income per head of population, and the cost of access may exacerbate the effect of a digital divide between countries. Damodaran et al. (2005) were of the opinion that the effect of the digital divide is demonstrated in the added costs entailed in maintaining the traditional access to over-the-counter services for those who cannot or will not use the e-government services. With an intensely competitive telecommunications market, the cost of Internet access is constantly decreasing, which has the flow-on effect of making e-government an affordable channel for citizens and businesses. International Telecommunication Union (ITU) statistics indicate that around 95% of top-level domains are located in high-income countries, which account for 16% of world's population, and this small percentage enjoys low cost Internet and ease of access (Schware & Deane, 2003). Damodaran et al. (2005) believes that those who are connected can obtain a more efficient service via e-government than those who rely on traditional service delivery channels.

### **3.5 Technological factors in e-government implementation**

Various technological factors that may influence the implementation of e-government are discussed in the following sections.

#### **3.5.1 Security and privacy**

Information security is concerned with information properties of confidentiality, integrity and availability, which underpin protocols governing user authentication, authorisation, in

addition to accountability and reliability. With increasing reliance on technologies connected over potentially unprotected, open data networks, effective management of information security has become one of the most crucial success factors for both public and private organisations. Studies have highlighted several common components of information security: security culture, management, information security infrastructure, and change management (Chang & Lin, 2007; Chaula, Yngstrom, & Kowalski, 2006).

The reality and potential for breaches of information security have an adverse impact on the willingness of the population to commit to e-government by supplying personal details (Beldad, De Jong, & Steehouder, 2009). Only a small percentage of that population see the trade-off between the benefits of electronic media and the risks, worthwhile (Woo, 2006). Since personal data is today a valuable commodity, maintaining confidentiality within an online environment is extremely difficult because information can be effortlessly recycled for unauthorised, unwanted, unknown purposes. Beldad et al. (2009) considered that although organisational efforts are put in place to protect customers' personal information, including the posting of privacy statements on organisations' websites, these assurances are half hearted at best and in reality there is no complete guarantee of security or privacy. Pollach (2007) pointed out that the posting of privacy statements did very little to ensure security and were designed to avoid litigation. Further, differences in the contents of privacy statements show that privacy has been interpreted differently by different organisations and many follow different practices to protect individuals' privacy. Studies have highlighted that there is a mismatch between the content of the privacy statement and what citizens expect such a statement should contain (Beldad, et al., 2009; Earp, Anton, Aiman-Smith, & Stufflebeam, 2005). Beldad et al. (2009) found that Dutch municipalities do not pay sufficient attention to the significance of making privacy statements noticeably on their websites. United Nation's (2004) study indicates that many developing countries are yet to consider adopting adequate legislation related to information security management (Shalhoub, 2006). Basu (2004) was of the opinion that in most developing countries, privacy is not a priority and without proper legal framework it is arguable how privacy of personal information could be maintained.

The main rationale of e-government is to provide access to government services anywhere at any time over the Internet, which in and of itself makes government information systems more vulnerable to potential security and privacy breaches. Government agencies need to realise that security and privacy are not only crucial for the delivery of online services but also for building citizens' trust and confidence in using these services as envisaged. Unless

citizens feel safe and secure with their online information and service activities, e-government initiatives are not going to grow at the expected speed (Beldad, et al., 2009). Studies show that a majority of Americans value the ease and efficiency of e-government but are still concerned over privacy and security issues (Palanisamy, 2004). McDonagh (2002) concluded that privacy laws are inadequate for most governments when protecting privacy within an digital environment. The challenge is to secure information and protect privacy while allowing the benefits of the Internet and other technologies to flow on to citizens. This balance is of particular importance to ensure seamless government services involving data sharing among agencies. Finding the correct balance between these competing priorities of government is one of the core problems in the development of a framework in this area (Basu, 2004). A study of over 2000 government customers found that more than 75% were concerned about the security of their credit card information and over 66% were worried about the privacy of their personal information (Ebrahim & Irani, 2005). In other, more recent, consumer surveys, about 97% were concerned about privacy issues (Privacy Commissioner, 2012) and 9 in 10 expressed concern over identity theft (DiMarzio Research, 2011).

### **3.5.2 Infrastructure**

A key technology for both commercial and government use of the Internet is broadband. Broadband is a genesis technology that is having a major impact on the way in which we live and work. Broadband evolution has been supported by commercial interests, where its application has allowed companies to explore new business opportunities, access customers and facilitate targeting of advertising through market research. Speedy access to information enables markets to work more efficiently. World Bank study suggests that broadband offers businesses the potential to increase the international competitiveness and economic growth of a country by fostering the growth and deployment of emerging electronic services including e-commerce and e-government (World Bank, 2006). For example, the Federal Reserve Board indicated that approximately 66% of USA productivity gains since 1995 have been due to the impact of communications and computer technology (Amiti & Stiroh, 2007).

Issues regarding adoption, usage and capacity development are central to debate concerning the role of government in developing broadband capacity. OECD broadband penetration statistics show that developing broadband infrastructure does not guarantee an increase in broadband adoption due to several factors (OECD, 2003). The high cost of deploying new local area networks has been found to be a major stumbling block to

broadband roll-out. Another issue is bandwidth download and upload rates, which are becoming increasingly inadequate as greater percentages of the population are using it. This inadequacy will grow further as Internet-based commerce, entertainment and private use also grow. For example, two-way multimedia services will demand high speeds in both directions. Moreover, it is difficult to calculate what bandwidth will be enough, within an evolving and dynamic context of public access, use and infrastructure.

In order to be effective, proposed e-government networks need to ensure that the services available through their portals are always available to citizens within a minimum response time. Layne and Lee (2001), and Schwarc and Deane (2003) discussed the importance of adequate communication bandwidth allocation for the successful integration of information systems across government organisations. Ferro, Leonardis, and Dadayan (2007) found a direct correlation between broadband availability and the implementation of e-government services. Their results suggest that a lack of broadband coverage can be fatal to the provision of e-government services among local administrations. The rationale behind public sector modernisation is to facilitate more digital cooperation, interactive e-government application and other information-intensive services to the public. This in turn will foster a significant nationwide demand for broadband infrastructure – justifying more investment, stimulating a market for broadband services. In short, widespread availability of broadband connections is a prerequisite for creating opportunities in terms of access to online public services. Similar approaches were found to be successful in Scandinavia, which resulted in the providing of broadband access to almost all public sector bodies, businesses and the majority of citizens (Bygstad, Lanestedt, & Choudrie, 2007).

However, the broadband penetration rate has been found to be different for different countries due to a number of factors. For example, the differences between the broadband penetration patterns of two countries can perhaps be attributed to differing housing patterns (Choudrie & Lee, 2004). South Korean cities are densely populated with high-rise residential building developments making broadband infrastructure installation easy. In contrast, the UK housing patterns are more scattered, making infrastructure installation difficult. Providing broadband in rural areas poses unique economic and technical challenges. Costs in areas of low population density are correspondingly higher and unlike other IT, the provision of broadband has technical constraints by which available speeds diminish with increasing distance from a central location. A national telecommunications and broadband policy that promotes increased access to broadband and reduced cost was found to be more successful in fostering broadband diffusion. Most of the OECD

countries with high broadband penetration, including Denmark, the Netherlands, Norway, Sweden and Finland, were found to have comprehensive and consistent broadband strategies (Kelly, Mulas, Raja, Qiang, & Williams, 2009). In contrast, local governments have little control over some important factors that influence the geographic distribution of broadband. However, local government policies can influence such factors as communications infrastructure deployment, and business and residential zone distribution that will shape the nature and quality of existing infrastructure.

In Italy the size of the local body has emerged to be the main driver for broadband diffusion (Ferro et al., 2007). As a result, all the municipalities below a threshold size are at risk of experiencing the digital divide phenomenon. Dwivedi and Lal's (2007) study on adoption of broadband revealed that socio-economic characteristics of citizens including age, education, income, and occupation have are important predictors of domestic uptake of broadband . Another stream of research aims at identifying what role 'killer applications' play in the development of faster broadband and attendant adoption. However, it is still debated whether broadband diffusion is due to 'killer applications' or due to increasing familiarity with the digital medium (Ferro et al., 2007).

### **3.5.3 Data and information**

Information quality is an essential attribute of information and depends on how the information is processed and organised by an organisation. It plays a critical role for successful information exchange and building relationship with customers and suppliers (Michnik & Lo, 2009). According to the IS Model (DeLone & McLean, 2003), information quality is concerned with the measure of the output of the system, which is found to be an important determinant of user satisfaction and adoption of technological innovation. Wongsim and Gao (2011) refer to information quality as the capability of data to be fit for use. Good quality information can lead to business success while poor information quality can lead to failure (Redman, 2008). According to Lee, Strong, Kahn and Wang (2002), the growth of information has increased the need for quality data in order for organisations to perform well, obtain competitive advantage, and survive in today's global economy.

The quality of information generally includes accuracy, timeliness, relevance, precision, and completeness (Ehikioya, 1999). Using the IS-Impact model (Guy, Darshana, & Taizan, 2008), researchers uncovered a range of important aspects about information quality including readability, clearness, and format (Wijesinghe, Sederay, & Tan, 2009). Other studies, on the adoption of accounting information systems, identified information quality

dimensions that included relevance, reliability, comparability, understandability, availability, effectiveness, efficiency, confidentiality, accessibility, integrity, compliance, accuracy, objectivity, security, completeness, and timeliness (Choe, 2004; Wongsim & Gao, 2011).

Information availability on government websites and the quality of information are the key constructs of web customer satisfaction and adoption. Wangpipatwong, Chutimaskul and Papisatorn (2005) found that 84% of their respondents who had used e-government websites confirmed that information quality was one of the main factors that influenced their adoption decision. Further, the authors found that information accuracy, relevancy and completeness were more important than precision and timeliness. In addition, barriers affecting the adoption and use of e-government websites included non-availability of desired information. Colesca and Liliana (2008) found that the citizens' higher perceptions of information quality and trust of e-government services directly enhanced the level of adoption of e-government in Romania. Availability of information has a significant impact on the speed of infrastructure establishment in developed countries, so that information availability should be considered when creating e-government strategies (Y. N. Chen, Chen, Huang, & Ching, 2006). According to Alam and Hassan (2011), information is the heart of any online service development and availability of information was found to be a limiting factor in e-government development in Bangladesh.

#### **3.5.4 Interoperability**

Interoperability plays a major role in the integration of systems and sharing of information between organisations. Interoperability has many definitions and among these, the key theme is the ability to exchange information over a heterogeneous network in a meaningful and useful manner (Santos, 2008). According to computer science literature, the term interoperability is mainly used in the context of middleware, which provides the capability for exchanging data between software components (Scholl & Klischewski, 2007). The concept is intended to represent a set of technical rules necessary to define a common interface between organisations who want to exchange data and functionality during their interoperation without necessarily changing their existing technologies. Akbulut (2003) highlighted that for successful interoperable systems, it is necessary to understand what interoperability means for information sharing.

The success of interoperability depends on several internal and external factors such as compatible technologies, consistent data structures, external influences over decision-making, and dominant professional standards. Bekkers and Korteland (2005) highlighted

seven types of interoperability issues that could arise, including administrative, operational, multi-channel, technical, semantic, legal and cultural issues. System interoperability has been researched and deployed for decades but with the advent of Internet, new realms of interoperability have been opened that require new sets of protocols. There are difficulties in developing and implementing interoperability standards because of their articulation and definition (Santos, 2008). Moreover, technological innovation sometimes makes an existing protocol obsolete. Thus, the dynamic nature of protocols is characterised as a continuous process of evolution and adaptation, and an on going tension exists between definitions and generalisations for the long-term presence of protocols. Although technological standards and methods for interoperability are available, even between systems of proprietary origins and legacies, it is at the expense of scalability and response time penalties (Scholl, 2005). Its feasibility also depends upon the degree of interoperability and the number of interoperating entities (Scholl & Klischewski, 2007). Thus, the higher the degree of interoperability, the lower the number of interoperating entities.

Researchers have highlighted that interoperability is essential in the achievement of one-stop government services (Goldkuhl, 2008; Tripathi, Gupta, & Bhattacharya, 2008). They have, however, acknowledged that interoperability is a complex process that brings challenges and limitations when implemented within a multi-agency environment. The inter-agency relationship can entail one party losing some of its autonomy when it would prefer to maintain control over its domain and affairs. The challenges are amplified while implementing interoperability between state and local governments as local governments are not simply scaled-down models of federal or state government agencies. Further, local government agencies tend to fall behind state and federal government agencies in terms of financial, technological and human resources and, therefore, may face greater risks and costs in participating in electronic information sharing initiatives. One possible solution to the over-arching interoperability problems in government is for all public organisations to follow the same standardised framework for organisational, semantic and technical interoperability (Hjort-Madsen & Gotze, 2004).

These challenges are further intensified by the complex goal structures and legal norms that public agencies work under in delivery service across the board. A review of literature indicates that academic research on electronic information-sharing among government agencies, thus far, has been limited in general (Atabakhsh, Larson, Peterson, Violette, & Chen, 2004). In particular, there appears to be no or limited academic research addressing local agency participation in electronic information-sharing with state agencies. After

analysing interoperability in e-government, Scholl and Klischewski (2007) indicated that interoperability is not only a technical issue but rather economic and political factors are equally important. Further, how most of these factors affect the overall results of interoperability are not well understood. Scholl and Klischewski considered that higher interoperability can be achieved if e-government initiatives are confined to small number of agencies than with larger memberships. In a study on the implementation of enterprise architectures in government, Hjort-Madsen (2004) indicated that it requires more than just having a common technical standard because different levels of government have different interoperability concerns, each relating to their specific functions.

### **3.6 Socio-technical approach**

The above literature review has focused on identifying factors that have influenced users' intentions to participate in e-government and factors that have influenced e-government implementation. In these studies, more emphasis has been given to the technological aspects of delivery than how organisations have engaged with citizens in identifying their needs. The high failure rate of e-government implementations and low adoption rates by citizens indicate that delivering a technical e-government solution without taking into account social pressures or the wider environment in which the technical solution operates is unlikely to be successful (Damodaran et al., 2005). An inter-disciplinary, 'socio-technical', approach is necessary in order to understand the complex interaction between the technology, local government objectives and citizens' needs in the context of constant organisational, technical and social change.

There is no clear definition of what constitutes a 'socio-technical' approach. Various attempts at a comprehensive definition have been made, all sharing a common focus on the interrelationship between technology, the people that design and use it, and the social environment in which this occurs (Berg et al., 2003). Socio-technical (i.e. 'socio' – people and society, 'technical' – machine and technology) theory has its origins in the work of the Tavistock Institute in London during the 1950s and 1960s. It refers to a set of theories and concepts used for the analysis of social and technical elements of an organisation in a way that reveals their interactions and inter-dependencies. It rejects the contention that technology is the major determinant of organisational outcomes. Such research has contributed to our understanding of both the social and technical dimensions of a system.

A cornerstone of socio-technical theory is the idea that a system consists of social and technical elements, and that to maximise its performance the inter-dependency between the

technical subsystem and social subsystem needs to be recognised. The technical subsystem is comprised of the tools and protocols used to transform input into output in a way that improves the economic performance of the organisation, whereas the focus of the social subsystem is the human element, i.e. the employees – the knowledge, skills, attitudes and needs that they bring to the work environment, in tandem with the authority structure of the organisation. Thus a socio-technical system integrates the social requirements of people doing the work with the technical requirements required to maintain the work processes (Whitworth, 2009). In the field of information systems design, Mumford (2006) has drawn upon these concepts to develop a socio-technical approach that ensures the social aspects of any given system development are balanced with technical aspects. Shin, Kim and Lee (2006) broadened this socio-technical notion to encompass a wider reach by including customers, suppliers, the rules and regulations (formal and informal), which govern the relationship of the organisation to society. They called these components the parts of an ‘environmental subsystem’.

This study is not aiming to use socio-technical theory *per se*. Rather, it will be using a ‘socio-technical’ approach in a more general sense to understand how technology, people, organisation and environment are interrelated and interact in e-government implementation and use. The reasons for choosing a socio-technical approach for this study are as follows. First, a socio-technical approach focuses on the entire business process, including both human and technical aspects. This approach is valid for studying e-government as a social system that deploys existing technological resources to achieve a wide range of tasks (Eason, 2007). e-Government implementation requires significant technological transformation together with procedural and cultural changes. It also seeks high levels of citizen engagement with electronically-mediated access to public services. Second, there is a substantial background of applying socio-technical ideas that have proved useful in understanding the impacts of a new technology (Nadin, Waterson, & Parker, 2001; D. H. Shin et al., 2006; Welch & Pandey, 2006). It is useful to use a critical and sceptical approach where there is the potential for reports of exaggerated impacts and benefits (Clegg et al., 2005). Third and finally, the application of socio-technical thinking may help place e-government in a wider context as socio-technical systems have no clear boundaries either within or between organisations. However, the researcher does not claim that this is the only approach to researching e-government; nor that it can provide a magic bullet for the problems associated with e-government progress. Rather, it is considered that a socio-technical approach would be the most appropriate for coping with an issue that is simultaneously technologically and socially complex.

The delivery of government services over the Internet is presumed to be a two-way communication between citizens and government (Chesbrough & Spoher, 2006). The process of adoption or utilisation of services is an integral part of a transaction that requires a comprehensive understanding of the social environment within which interaction between people, processes, organisations, businesses and technology takes place. In other words, a socio-technical understanding is required to organise and manage systems that cross traditional understandings and boundaries. Whilst there have been a number of research projects that investigate the adoption and use of IS within a socio-technical framework, there have been only a few that look at the Internet and its use in terms of an open system wherein social and technical forces come into play to shape its evolution.

In the e-government domain, a few studies have been carried out using the Technology-Organisation-Environment (TOE) framework of Tornatzky & Fleischer, (1990) (e.g. Pudjianto & Hangjung, 2009; Srivastava & Teo, 2007). The findings of these studies provided a rich understanding of technology, environment and organisation factors that had impacted on e-government implementation. However, these studies do not specifically address the people dimension of e-government. There are several studies that have explored factors from citizen's perspective and provided several relevant factors for this study (Carter & Belanger, 2005; Reddick, 2005; West, 2004). This study builds on these earlier studies by combining citizen factors with those of technology, organization and environment to develop a more rigorous conceptual framework with which to better understand the drivers and barriers of e-government adoption and implementation.

This study uses a socio-technical approach to research and understand local e-government implementation and citizen adoption in New Zealand. A literature review was conducted on issues influencing e-government implementation and adoption and a conceptual framework was developed. Figure 3.2 highlights the inter-weaving of social and technical aspects of the way e-government functions and the relationship to the environment in which it operates.

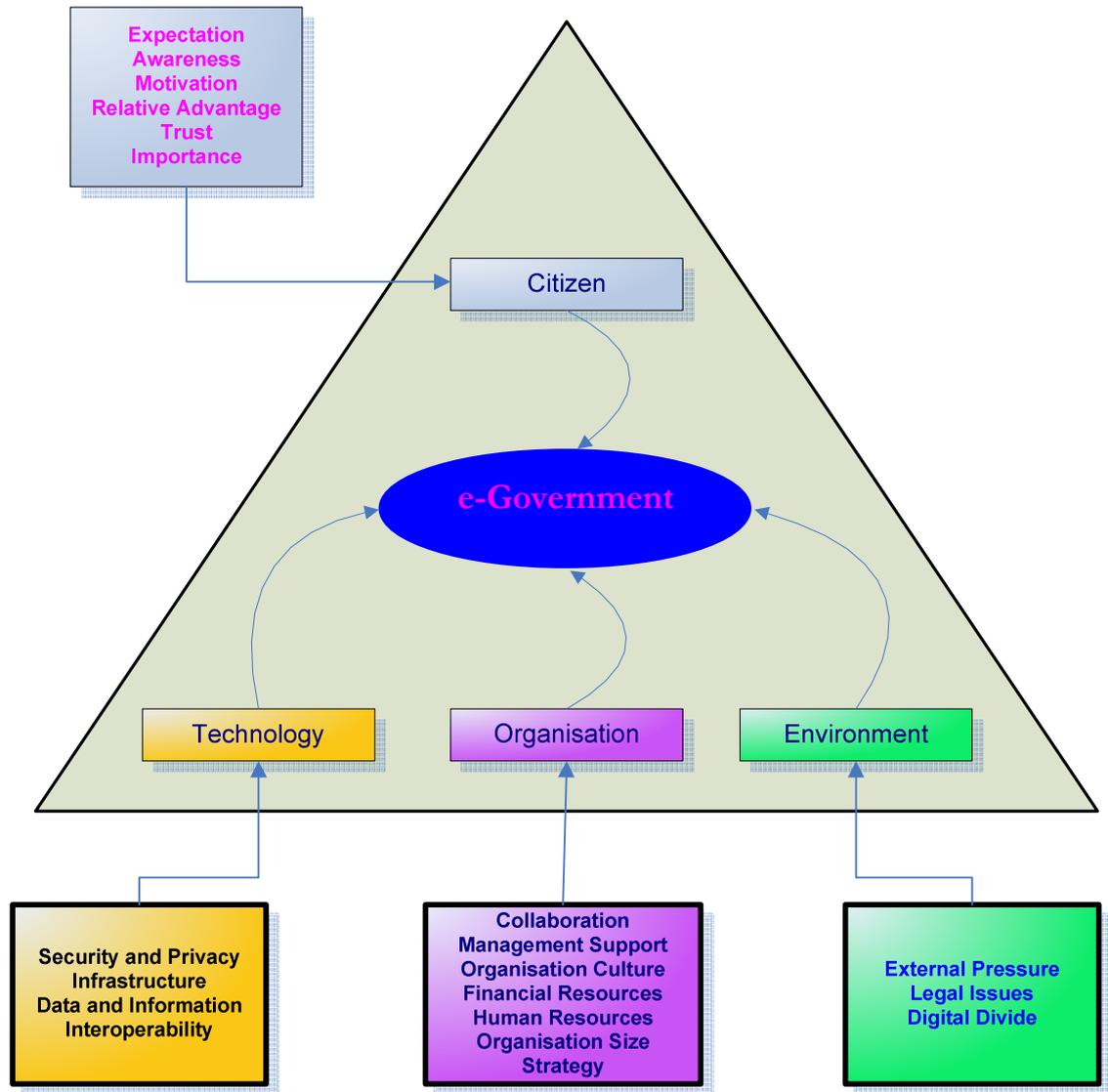


Figure 3.2: Conceptualisation of e-government using a socio-technical approach

In this framework, the social dimension of e-government is divided into organisation and citizen perspectives (Sawyer, Allen, & Lee, 2003). Factors identified in this literature review, relevant to the former include a willingness to collaborate, support from top management, the organisation culture, availability of adequate financial and appropriate human resources, organisation size, and the presence of an e-government strategy that takes into account citizens' needs and expectations. With regard to the latter, citizens' expectations of their local government, their awareness of e-government, their motivation for participating in it, and their perceptions of the relative advantage, trust and importance associated with using e-government were identified as potentially relevant factors. Aspects of the environment within which e-government operates that may influence local government bodies' implementation of e-government include external pressures or influence from within the sector or from central government, the existence of various legal issues and the extent to

which they can be solved, and the presence of any digital divide. The need for information security and privacy of personal information, the availability of networking infrastructures, data and information quality, and appropriate information and interoperability standards, can be considered as necessary technological factors for e-government.

### **3.7 Summary**

This chapter has reviewed a range of e-government maturity models, discussed the pros and cons of those models and has used an existing model for this study after redefining its two stages. The chapter reviewed the literature on citizens' expectations of local e-government and factors that have impacted on their decisions to adopt or use online local government information and services. It also reviewed literature on factors that have influenced local government initiatives in implementing online information and services. Using a socio-technical approach to research and understand local e-government, a model is proposed to investigate factors that have impacted use and implementation of local e-government in New Zealand and to answer the following questions:

1. What is the level of e-government maturity at the local government level in New Zealand?
2. What are citizens' expectations of local e-government?
3. What influences citizens' participation in local e-government?
4. What objectives do local government bodies have when setting up e-government initiatives?
5. What are the barriers for local e-government implementation?

## **CHAPTER 4      METHODOLOGY**

### ***4.0      Introduction***

This chapter discusses the research methodology used in this study. First, it describes the research approach and design adopted to accomplish the objectives of this study. Subsequent sections outline the data collection methods, sample selection and data analysis techniques used in each main part of the research, including the motivation and justification for particular method adoption.

### ***4.1      Research approach***

There are many ways of conducting research and it is up to the researcher to select the approach appropriate for answering the research questions and meeting the research objectives of a particular project. Each approach is associated with a different research tradition or paradigm in the natural and social sciences. A research paradigm is a framework that holds the philosophical underpinnings from which specific research approaches flow (Weaver & Olson, 2006) Humble and Morgaine (2002) describe paradigms as ideological frames based on congruent and logical thinking patterns, founded by communities of researchers with shared beliefs about the nature of reality and knowledge construction. Traditionally, three main paradigms for performing research in social science are distinguished: positivist, interpretivists and critical (Orlikowski & Baroudi, 1991). Although the epistemologies associated with these paradigms are philosophically distinct, based on differences in the criteria used for paradigm configuration by scholars, these distinctions are not always clear in social science research (Myers, 1997).

In the social sciences, positivist studies aim to provide possible causal explanations of human behaviour through the formulation and testing of hypotheses (Marvasti, 2004). According to Keenbone (2002), "*positivism is a way of theorising and researching an objective social reality, a linear progression from ignorance to knowledge and an inexorable movement away from incompleteness and error*"(p. 516). In positivist studies, the researcher takes a neutral and objective stance in relation to the reality researched. As the aim of this study is not formulating and testing hypotheses, a positivist approach is not considered.

In contrast, interpretivist researchers believe that the world is socially constructed and composed of a series of subjective realities rather than composed of a single objective

reality. Interpretivists aim to capture how people construct their everyday realities by observing the events and situations that people face. In this research tradition, the researcher attempts to understand from an insider perspective, by focusing on the perceptions of the research participants, rather than observing at a distance from the outside. Mutual recognition between the researcher and participants is fostered and valued (Weaver & Olson, 2006). However, for this study, the researcher aims to remain a spectator, observing the world and remaining neutral throughout the study. Thus, an interpretivist research approach is not considered appropriate for this study.

A critical research approach seeks to critique and transform social relations by revealing the underlying sources of those relations and the asymmetries of power inherent in them. Critical research studies may be intervention-oriented, associated with participants and often involve action research. As the aim of this study is to understand e-government adoption in New Zealand rather than transforming any social relation, a critical research approach is not considered appropriate for this study. However, this does not preclude being critical, in the sceptical sense, to claims made about e-government (Clegg et al., 2005).

The three main research paradigms outlined above do not represent an exhaustive or exclusive set of research traditions or possibilities. Indeed, in recent years there has been an increasing interest in applying the philosophy of 'critical realism' in the fields of management and organisation studies, and information systems (Fleetwood & Ackroyd, 2004; Mingers, 2004). Critical realism maintains a realist ontological position while accepting a relativist epistemological view of knowledge as socially and historically conditioned (Mingers, 2004). As such, it fits well with a 'post-positivist' research approach. According to Guba (1990), post-positivism is a modified version of positivism that:

1. Is based on a form of critical realism – reality exists independent of our knowledge of it and can never be perfectly perceived; post-positivism acknowledges the interaction of the researcher and the researched, but strives to be reflectively neutral.
2. Emphasises the importance of multiple measures and observations because it recognises all measurement is fallible and, therefore, endorses the use of triangulation to get a better understanding on what is happening in reality.
3. Attempts to redress alleged imbalances of positivist research by a) doing research in natural settings to increase relevance b) using qualitative methods to increase richness and c) depending more on theory grounded in local contexts.

Since the emphasis and focus of this study is individual and organisational experiences of a social and technological phenomenon, e-government, the researcher believes that this is best suited to a post-positivist research approach, where reality is seen as complex and holistic. Most post-positivists believe that we construct our view of the world based on our perceptions of it. Because perception and observation are fallible, our constructions are thereby imperfect. If we cannot truly perceive reality with our imperfect human sensory and intellectual mechanisms, then a 'multimethod' approach, using multiple sources of data and multiple methods, can improve objectivity and reduce distortions in the interpretations or findings of a study.

#### **4.2 Multimethod research**

There are a growing number of researchers from different social science disciplines who are using a multimethod approach to study social phenomena (Gorard & Taylor, 2004). The multimethod approach is also referred to as mixed-method (Reeves, 2000), triangulation (Myers, 1997), or pluralist methodology (Mingers, 2001). Various researchers (Kaplan & Duchon, 1988; Mingers, 2001; Tashakkori & Teddlie, 1998) have suggested that a multimethod approach enhances the understanding of a complex social phenomenon that may not be fully understood by adopting a single method approach. Erzberger and Perin (1997) indicate that mixing methods provides an opportunity for presenting a greater diversity of divergent views of an issue. Multimethod research is a comprehensive research design where limitations of one method are compensated by the strengths of the others (Wong, 2002). Proponents of multimethod research claim that by combining methods a study can explain and explore, verify and generate theory all at the same time (Tashakkori & Teddlie, 1998). Other researchers argue that a multimethod approach enhances the robustness of the research understanding (Harden & Thomas, 2005; Mingers, 2001).

The literature on multimethod research suggests that multiple methods are used in research when two or more issues are inter-related within a broad topic and where information on some part is available and the other needs to be explored (Tashakkori & Teddlie, 1998). Thus, there is support for using a multimethod approach to study e-government. Gil-Garacia and Pardo (2006) described e-government as a complex phenomenon that involves technological, organisational and social aspects and, therefore, needs multiple methods to understand the various aspects of e-government. Mingers (2001) had a similar view of e-government and expressed that e-government processes are inherently complex and multidimensional and their study would thus benefit from using a range of methods rather a single method.

However, a multimethod approach presents a number of challenges (Gil-Garcia & Pardo, 2006). These include requiring more time and effort; less established reputation compared to a well-defined single method study; and a lack of knowledge about multimethod research and possible incommensurability between methods. Other potential problems could be the requirement for more extensive data collection, the intensive nature of analysis, and the familiarity required with different methods. Nevertheless, considering the post-positivist orientation of the researcher and the complex social and technological phenomenon that is e-government, a multimethod approach is used in this study. By combining different research methods, the researcher aims to broaden the dimensions and the scope of this study, and to gain a richer understanding of the complex phenomenon of e-government adoption and implementation, made comprehensible through the application of exploratory and explanatory approaches.

A review of the literature on multimethod research shows that a range of approaches to research design are possible. For example, positivist researchers often speak of a phase model in which qualitative data would be used for hypothesis generation and subsequent quantitative data for hypothesis testing. Conversely, post-positivist researchers might support an approach in which the combination of qualitative and quantitative data would be used on the same object to generate a comprehensive picture of the research subject (Flick, Kardorff, & Steinke, 2004). Creswell (2003) and others (Tashakkori & Teddlie, 1998) suggest two basic strategies for a multimethod study: sequential and simultaneous. In a sequential strategy, one method is used first and based on the findings, a second method is used to clarify the findings of first (Gil-Garcia & Pardo, 2006). Alternately, in a simultaneous strategy, each part of the study is planned and conducted to answer a particular set of questions (Tashakkori & Teddlie, 1998). Thus, the simultaneous strategy uses several methods concurrently to understand a single phenomenon. This study proposes to use a qualitatively-driven, sequential multimethod research design (Denzin & Lincoln, 2000), in that each method will predominantly focus on a specific set of research questions about a single phenomenon, local e-government, and that the methods will follow one after the other rather than be conducted simultaneously. The intention is to develop a theoretically informed analysis and explanation of a complex phenomenon (Gregor, 2006).

### **4.3 Data collection methods**

There are numerous approaches that a researcher can take towards data collection, the choice of which depends on the depth, breadth, time span, and objective(s) of research. As

noted in chapter 1, this study has three main objectives: (1) to evaluate the progress of New Zealand local government in implementing e-government information and services for its citizens; (2) to identify factors influencing local government objectives for and implementation of e-government; and (3) to identify citizens' expectations of local e-government services and the factors that influence their participation. It is a difficult task for a researcher to choose an approach for his or her study due to several options and each with its own set of advantages and disadvantages. Established researchers often argue for their own research method (Galliers, 1992). Out of these available methods, experimental studies that are carried out in a systematic way, either in a laboratory or natural setting, whereby researchers tend to keep some variables under their control. Experimental studies are difficult to perform in business research (Hussey & Hussey, 1997). In longitudinal studies, fixed samples are repeatedly investigated and measured over a period of time with a view to find out the relative stability of the problem under study. This often runs for many years. Further, a survey can be a powerful and effective tool for collecting data on human attitudes, behaviour and characteristics. A survey is made when a sample of elements is selected to be representative of the investigated population. According to (Yin, 1994), survey approaches become more relevant when research is on contemporary events, or when the research question is about 'what', 'how much', or 'how many' questions and behavioural control is not firm. Sometimes surveys are the only available option for acquiring information to investigate research questions. With respect to the analysis of research approaches used for investigating technology adoption issues, Choudrie and Dwivedi (2005) found that the survey approach was favoured in studies related to individual users or consumers. However, surveys may not be the best approach for every study, as they require familiarity with the basic principles and methods of statistical analysis for large survey data sets (Doyle, 2003).

Considering the advantages and disadvantages of each method has, a sequential multimethod research design, comprising three different methods, was used in a three-stage data collection process to achieve the research objectives. In the first stage, a local government website analysis was carried out to evaluate the nature and extent of online information and services provided by New Zealand local authorities. In the second stage, a web-based survey was conducted to collect data on citizens' perspectives of local e-government and the factors influencing their participation in e-government. In the third and final stage, an interview programme was carried out to collect data on e-government objectives and experiences from local government officials across New Zealand. Each of these methods are discussed in the following sections:

#### **4.4 Website analysis**

Analysis of the local council websites involved a form of content analysis. Content analysis is a systematic and quantitative technique for studying communication messages and developing inferences concerning the relationship between messages and their environment. According to Krippendorff (2004) content analysis is a method for making replicable and valid inferences from text that has four distinct strengths: it is unobtrusive, it can handle unstructured matter, it is context sensitive and it can handle large volumes of data. Even though web-based communication differs from traditional media in several ways (e.g. multimedia, hyper-text, packet switching, synchronicity, and interactivity), content analysis was one of the first methods used in web analysis (Herring, 2004). The wide range of the forms and functions of web pages, and the dynamic environment in which content changes and is updated regularly, has provided a variety of opportunities and challenges for such research. A small number of studies have focused on how researchers have applied the principle of traditional content analysis into the dynamic environment of the web. For example, McMillan (2000) observed asynchronous coding among coders where later coders evaluated updated website contents differently from an earlier coder.

McMillan (2000) found that content analysis traditionally involves a set of procedures that can be applied in the dynamic communication environment of the web. These include: (1) formulating research questions; (2) selecting a sample; (3) defining categories for coding; (4) training coders, coding initial content, and checking the reliability of their coding; and (5) data collection, analysis and interpretation. McMillan (2000) advocates adhering to the above procedures as closely as possible when analysing web content. For example, research questions should be narrowed and a context should be identified from prior research. Regarding the sample, each unit should have the same chance of being represented in the collection of sampling units; i.e. the sample ideally should be random. For defining coding categories, McMillan (2000) suggested that researchers might apply categories of content found in prior research. Multiple coders should be trained in advance regarding the sample, and there should be established tools for checking inter-coder reliability.

This study attempts to provide a better understanding of the current status of e-government at the local government level in New Zealand. This is therefore an exploratory study, which is appropriate given a problem that is difficult to demarcate, for which limited knowledge on the subject area exists, and for which there is no clear indication as to what model should be used for gaining a better understanding of dimensions of the problem, if

any. The study uses the content analysis method as prescribed by McMillan (2000) for the website analysis of local e-government websites. Following sub-sections describe sample selection, coding categories, coding rules and coder training and data collection. for website analysis.

#### **4.4.1 Research question and sample selection**

The research objective for this part of the study is to determine the extent to which New Zealand local councils have implemented e-government information and services. Good sample selection involves considering that every member of the population has a chance of being selected. The sample should also be unbiased and large enough to satisfy the requirements of the research. The study sampled the websites of all 67 New Zealand city and district councils, meaning that the sample represents the total population of local council websites.

#### **4.4.2 Coding categories**

A number of website assessment indicators have been developed for assessing government websites. For example, the Web Measure Index and e-Participation are the UN's quantitative and qualitative indices for assessing e-government status (United Nations, 2005). West (2004) assessed and rated websites based on information availability, service delivery, and public access features in government websites. Jong and Lentz (2005) have developed a scenario evaluation method to apply to municipal websites, which involves exposing experts to realistic usage scenarios with limited sets of user characteristics and evaluation criteria. This facilitates the detection of user problems in municipal websites. Another assessment is done through the use of an index or benchmark, which produces evaluations such as 'country X is ahead of country Y' or 'country Z has move from 7th position to 5th position in the ranking table' in terms of e-government development. Flak, Olsen and Wolcott (2005) suggest that indexes built on a wide range of indicators may include some that do not relate to e-government in a particular country and thus require a local understanding of governments in their contexts, what they do, and what their limitations are. Their survey of Norwegian public websites evaluates the quality and content in three dimensions: accessibility, user interface and content of information and services. The instrument focuses primarily on design quality; content is evaluated only at aggregate levels. Chen et al. (2006) presented validation levels for the diagnosis of e-government websites and have identified checkpoints for each level, which may improve website accessibility. Some studies have suggested that website assessment indicators, developed for the private sector, can be useful for assessing local government web sites. According to

Barnes and Vidgen (2004), indicators assessing usability and general design principles are thought to be equally valid in both sectors. However, in practice, both the number of available services and the nature of the services provided differ significantly between government and business websites. While private organisations typically provide a small number of services targeted at defined customer groups, government agencies are expected to provide a wide range of services targeted at all citizens. Hence the use of the same instruments for both sectors can lead to incomplete assessments which generate only part of the data necessary for comparison.

Flak et al. (2005) employed the MeGAP-3, an assessment tool that was developed to assess the status of municipal e-government implementations in the United States (Kaylor, 2005) and to assess the status of municipal e-government in Norway. The researchers were aware of the challenges to a direct transfer of a tool across political and cultural settings, but they adopted the tool with the assumption that a common assessment tool could increase the ability to benchmark diverse government websites and transfer knowledge internationally. From the study results, Flak et al. recommended that national as well as government-level specific assessment indicators are needed for evaluating e-government maturity. Abdelsalam et al. (2010) have investigated the maturity of an Egyptian local e-government's website using tools developed by merging the MeGAP-3 with an assessment tool used by Shackleton, Fisher and Dawson (2004). Abdelsalam et al. (2010) found that the MeGAP-3 needs to be extended in the Egyptian context. For example, licenses for pets were excluded from the MeGAP-3 for their study.

It is understood from literature that the rapid momentum of e-government resulted in the accommodation of distinctive metrics to examine e-government maturity in many studies. In particular, studies that focused on either local e-governments or municipal e-government development differ from one another greatly in the sets of metrics identified and provided no coherent overall picture (Flak et al., 2005). For this study, a content matrix was developed using the MeGAP-3 (Flak et al., 2005), the tool used for Egyptian study (Abdelsalam et al., 2010), and the metrics used by Huang (2006), who investigated e-government websites at the level of USA counties. These frameworks were chosen because they are less complex than many alternatives, and are based on objective measures of features and online services available through a local government website. Features from each assessment framework were evaluated in terms of the New Zealand local council context and then were either taken as they were, modified using terminology used by councils in general, or deleted if an item or service was found to be not relevant to New

Zealand local councils. For example, the property tax indicator was deleted as it is not valid for New Zealand context, and 'Emergency Management' was changed to 'Civil Defence' as the latter is the term used in New Zealand. A small number of items were added into the assessment framework that were not present initially in the sources used but were based on the author's experience of New Zealand local councils. Appendix A shows from where the items in the assessment framework are sourced. The final assessment framework includes 80 items grouped under the four stages of the proposed maturity model and is shown in Appendix B.

#### **4.4.3 Scoring rules**

To evaluate the local council websites, each of the 80 features in the assessment framework was given a score of '0' or '0.5' or '1', indicating the degree of completeness or the web-based implementation of a particular feature. This scoring pattern is consistent with the assessments used by several prior studies (Abdelsalam et al., 2010; Flak et al., 2005; Z. Huang, 2006). The details of the scoring used are as follows:

##### **First stage: *Information***

- Score: 0 – No information about a given service or function exists on the website.  
0.5 – Very limited information is provided on the website. For example, a website might identify information about council departments without any contact details.  
1.0 - Substantially complete information is available on the website.

##### **Second stage: *Interaction***

- Score: 0 – Not able to interact with the council online.  
0.5 – Limited ability to interact with the council online. For example, a website might open a window in the default email package to enable the user to send an email to the council when a request for a service feature is selected.  
1.0 - A form with pre-defined service types, together with other features, appears on the screen when a request for a service feature is selected.

##### **Third stage: *Transaction***

- Score: 0 – Unable to carry out a transaction online with council.  
0.5 – Making payment without completing process; e.g. council hall booking and payment cannot be done at the same time.  
1.0 – Completing a process and making payment; e.g. hall booking and payment is done online.

##### **Fourth stage: *Integration***

- Score: 0 – No integration with other departments of the council or with other government organisations.  
0.5 – Partial integration is available, e.g. it is possible to make a single payment for multiple services from a council.  
1.0 - Complete multiple processes involving different councils; e.g. dog registration checks whether or not the dog already registered to another council, or application for a permit can be lodged from any council.

#### **4.4.4 Coder training and data collection**

Assessment of the local council websites was conducted by a group of three graduate students (coders). Prior to analysing the websites, a training session was arranged for the coders in order to familiarize them with operational definitions and coding guidelines. In particular, a procedure was defined which explained how to examine each of the 80 items, with emphasis on those items which might have different interpretations. This means that the measurement process is independent of the evaluator's point of view. This enabled coders to use the assessment framework effectively and thus improved coding reliability. Each coder was instructed to make autonomous evaluations without any input from other coders and to also not to copy results from other coders.

As suggested by Kolbe and Brunett (1991), the researcher did not participate in the coding in order to ensure objectivity, which is a fundamental component of content analysis as it encompasses details that directly affect the overall quality of the judging process. Other than training the coders and explaining coding guidelines, the researcher helped coders from time to time in clarifying the meaning of a service or function as it appeared in its various names on different websites. For example, 'Online GIS' appeared as 'Maps' on a few websites.

Each coder was given the same two websites for initial coding at the beginning. The results of all three coders were then assessed and compared, and areas in which coders required further understanding were identified. A second training session was arranged for all coders and their lack of understanding of particular features was discussed. The main content analysis of the local council websites was then conducted. For each website, the assessment was carried out by each coder independently, and then results from all three coders were compared and discussed in order to reach a consensus with respect to scores. Data was collected from a content analysis of the 67 websites comprising the sample.

#### **4.4.5 Analysis of website data**

The content analysis of the 67 local government websites was based on the presence or absence or partially presence of information and services on the websites. Each feature was given a score as described in section 4.4.3. The total scores were for each stage of maturity was obtained by adding items within that stage and then a comparison of the total scores is presented, followed by the scores of the different stages in the proposed maturity model,

the frequencies of the most and least common features and finally summary of the findings presented at the end.

#### **4.5 Citizen survey**

Conducting the survey over the Internet was considered because of the fact that web and e-mail surveys are quite common (Kaplowitz, Hadlock, & Levine, 2004), accounting for 20% of global data collection expenditure in 2006 (Vehovar, Lozar, & Manfreda, 2008). Analysis of prior studies that conducted surveys on the Internet have shown web and e-mail surveys can offer shorter administration time and lower survey costs (Porter, 2004; Yun & Trumbo, 2000). While several experiments have yielded higher response rates in web-based surveys compared to postal surveys (Cobanoglu, Warde, & Moreo, 2001), other studies have shown mixed or contradictory results. For example, while Cobanoglu et al. (2001) reported that web-based surveys have an 18% higher response rate than postal surveys, Schaefer and Dillman (1998) reported a 0.5% increase, Shannon and Bradshaw (2002) reported 15%. Manfreda et al. (2008) found 11% lower response rates, whereas Weible and Wallace (1998) found them to be only 1% lower. Porter (2004) suggested that reduced response rates could be due to the survey design and characteristics of the sample. Kaplowitz, Hadlock and Levine (2004) suggested that a web survey can achieve a higher response rate when the population has easy access to the Internet and is comfortable with using the Internet (Dillman, Tortora, Conradt, & Bowker, 1998). Aside from this, lower response rates in web-based surveys were reported either because the survey instrument was delivered to non-regularly-used email accounts, or because of the 'fancy' appearance of survey websites (Cobanoglu, et al., 2001; Diem, 2002).

Several arguments have been made in the past in support of online surveys. These arguments focus on the advantages of online surveys such as their ease of administration, their low cost, their wide reach, and their ability to capture and analyse data quickly. Some disadvantages of online surveys include possible loss of anonymity, increased complexity of design, and limited accessibility (to non-computer users) (Dillman, 2000). Other challenges in the use of web and email based surveys are that recipients may delete unsolicited messages without reading them, considering them as junk mail or a spam (Dillman, 2000). Yun and Trumbo (2000) have highlighted ethical concerns and technical problems generally involved in web-based or email surveys. Fricker and Schonlu (2002) examined the claims that web surveys can be conducted faster, better, cheaper, and easier than surveys conducted using conventional modes, finding no clear evidence in literature to support these claims. However, Fricker and Schonlau acknowledged the possibility of implementing

web surveys in ways that are more effective and cost-efficient than other survey methods, and suggested that they will continue to grow in importance for conducting certain types of research surveys.

In terms of the alternatives to web-based surveys, the potential coverage of postal surveys is higher because every individual has some kind of postal address. Further, non-deliverable survey instruments in postal surveys are lower than that of web-based surveys. With postal surveys, even if one's postal address gets changed, people can use the facility of mail forwarding to forward the survey to the correct address. However, in case of email there is usually no way to redirect emails sent to an old email address. The advantages of postal surveys are that they are relatively low cost, survey respondents can answer at their leisure, and any potential bias (<http://knowledge-base.supersurvey.com/glossary.htm> - [interviewer bias](#)) may be reduced due to lack of contact with the researcher. The disadvantages of this method are that: response rates from individuals with lower literacy levels are often too small to be useful; the response speed or time required for a survey to be returned is much higher in mail survey than web survey; and after completing the questionnaire, respondents for mail surveys may experience a greater burden in returning the survey questionnaire than those who complete a web survey, in which respondents only need to click 'submit' or 'send' (Schaefer & Dillman, 1998). Furthermore, some survey research has found that web surveys generate longer open-ended responses than mail surveys (Newman & McNeil, 1998).

Telephone surveys are popular because information can be obtained quickly and can be inexpensive if dialling is local and staff/volunteers are available (Newman & McNeil, 1998). This method is appropriate when there are a few simple questions to be asked and when superficial information is sought from respondent instead of in-depth responses. Since the current study aims to collect information on several factors and on citizens' perceptions towards online local government services across the country, it was found that a telephone survey would not be suitable.

In the case of face-to-face, structured interviews, there are advantages such as i) the interviewer can gain insights into why the respondent answered the way he or she did; ii) there is a potential to collect sensitive data; iii) complex questions can be asked; and iv) interview sessions may be recorded. The disadvantages of structured interviews include a) a high time and cost requirement; b) the requirement of interview training; and c) low coverage (Cobanoglu, et al., 2001; Czaja & Blair, 1995; Diem, 2002). Consequently, the

researcher decided not to use this option for this study. The advantages and disadvantages of various data collection methods are shown in Table 4.1.

	Postal Survey	Telephone Survey	Structured Interview	Web-based Survey
<b>Coverage</b>	<b>High:</b> Everyone has some kind of address	<b>Low:</b> Not everyone has a telephone	<b>Low:</b> Sample size must be low	<b>Medium:</b> Everyone may not have access to Internet
<b>Response rate</b>	<b>Low:</b> Low response in general	<b>Medium:</b> Generally people participate	<b>High:</b> Generally every respondent will participate	<b>Low:</b> Generally low with exceptions
<b>Speed</b>	<b>Low:</b> Takes time, requires follow-up	<b>High:</b> Quick response possible	<b>High:</b> Quick response possible	<b>High:</b> Quick response possible
<b>Wrong address</b>	<b>Low:</b> Change of address can be tackled using mail forwarding facility	<b>Low:</b> Change of telephone number can be handled except unpublished numbers	<b>Nil:</b> Direct contact with participant	<b>Low:</b> Email will be bounced
<b>Labour</b>	<b>High:</b> Copying, labelling, folding and stuffing into envelopes and preparing return envelopes takes considerable labour	<b>Medium:</b> Staff required for dialling	<b>Low:</b> Except preparing questionnaire and interviewing, no other labour is needed	<b>Low:</b> Except setting up website, labour is minimal
<b>Expertise to construct</b>	<b>Low:</b> Easy to construct	<b>Low:</b> Easy to construct	<b>High:</b> Requires social skills and quick thinking	<b>Low:</b> Several pre-designed templates are available
<b>Cost</b>	<b>High:</b> Postage, photo copying, stationery and labour costs are involved	<b>Low:</b> If dialling is local and volunteers are available	<b>High:</b> Requires an inordinate time and cost	<b>Low:</b> Minimal cost for hosting
<b>Data analysis</b>	<b>High:</b> data survey needs to be entered in software for analysis	<b>High:</b> data survey needs to be interpreted and /or entered in software for analysis	<b>High:</b> data survey needs to be interpreted and /or entered in software for analysis	<b>Low:</b> Data from Web-based surveys can be easily imported into data analysis programs
<b>Issues</b>	Can be buried in junk mail  Requires literacy  Difficult to get accurate mailing list	Language barrier could affect the process  Caller ID and answer machines limit access  Only few and simple questions can be asked  Respondent might be uncooperative	Trained interviewer needed  Researcher can make more valid interpretations  More than one interview might be necessary to check the validity of the data if third party is engaged	More than one email address per respondents  Can be deleted without opening / reading email  Sampling of e-mail addresses is difficult  The decision not to respond is likely to be made more quickly  Multi-media graphics and sound can be incorporated into the survey instrument, if needed

Table 4.1: Advantages and disadvantages of various methods of data collection (Hair, Celsi, Money, Samouel, & Page, 2007)

From Table 4.1 it is evident that costs and time requirements are lower in a web-based survey than other type of surveys. Since this study intended to collect information from citizens across New Zealand, it was not feasible—in terms of time and other resources available for this study—to cover such a widely dispersed area through a postal, telephone, directly administered or personal interview survey. This study, therefore, will utilise a web-based survey for collecting data from citizens. Since 85% of New Zealanders have access to

the Internet (<http://www.stats.govt.nz>), of which nearly 27% have a broadband connection (Porter, 2004), it was expected that the majority of New Zealand citizens would potentially be able to participate in this survey. Further, since the subject of the study was local e-government, the researcher was particularly interested in the experiences, attitudes and expectations of those citizens able to use local e-government information and services. Since Internet access is required for participation in local e-government, using a web-based survey controlled for this.

#### **4.5.1 Improving response rates**

Demands for survey research are increasing due to constantly changing nature of people's requirements, but reports indicate that survey response rates have been falling, both in USA and Europe (Porter, 2004). While addressing the cause for this decline, researchers suggest that respondents may either lack the propensity to give an adequate response, or they may be suffering from survey response fatigue (Dillman, 2000; Porter, 2004). Since non-response is usually not random, conclusions drawn from such underrepresented data may be erroneous. It is, therefore, essential for researchers who are conducting a survey to understand how respondents will perceive and react to it. Literature based on the reasoned action approach reveals that researchers have considered different methods of survey administration and survey design to improve the rate of response. For example, researchers have experienced improved response rates by reducing survey lengths, providing cash incentives, reducing the cost of survey participation, and by using multiple contacts with members of the sample (Trouteaud, 2004). Literature based on the psychological approach has tended to focus on several heuristic factors to increase survey response rates, including helping tendencies, compliance with legitimate authority, and the norms of reciprocity. Keeping in mind these two different approaches, the following factors were considered in an attempt to increase the survey response rate of this study.

##### **A. Survey length**

Results of experimental studies on surveys indicate that surveys in which the length of questionnaire was short yielded a better response rate than surveys with a long questionnaire (Trouteaud, 2004). Further analysis by Trouteaud showed that respondents abandoned surveys because they lacked the spare time needed to complete a longer survey. A study in the USA using Census Bureau forms of varying lengths found that the response rate increased by 4% when a shortened questionnaire was used (Groves, Singer, Corning, & Bowers, 1999). Likewise, a survey in Norway found the response rate to drop by 9% when the length of questionnaire was increased (Porter, 2004). Yammarino, Skinner and Childers

(1991) estimated that a 5% reduction in the response rate for every additional 10 pages of questionnaire. Another study (Porter, 2004) estimated an 8% drop in the response rate for surveys greater than four pages length. However, other studies have only found minor differences in the response rate for longer and shorter surveys (Porter, 2004). This indicates that survey length alone might not be enough to predict response rates, and so there might be other factors at play. In order to increase the survey response rate of the current study, consideration was given to the length of the questionnaire during its development and pre-testing phases. After obtaining opinions during the pre-testing phase, the decision was made to reduce the number of questions from 31 to 28, and in the pilot study several respondents confirmed that the final form of the survey did not appear to be lengthy. This also allowed the questionnaire to be completed in a shorter amount of time.

### **B. Statement of confidentiality**

Kiernan, Kiernan, Oyler and Gilles (2005) found that respondents were worried about the confidentiality of their responses, and this concern caused a low rate of response in their survey. Porter (2004) suggested that providing a statement of confidentiality fosters a sense of trust which in turn influences survey response rate. However, in a meta-analysis of thirty studies, Singer, Thum and Miller (1995) revealed that the inclusion of a strong statement of confidentiality resulted in lower response rates. Singer, et al. suggested that a strong confidentiality statement led to the belief that the surveys contained sensitive or embarrassing questions, discouraging participation. Dillman et al. (1996) suggested that neither a standard statement nor a strong statement of confidentiality has any significant effect on the response rates. However, for this study, it was decided to include a standard confidentiality statement in the questionnaire as well as in the email that contained the web survey link. This was also a requirement of the research ethics approval process.

### **C. Salience**

Topic salience is an important issue (Barrios, Villarroya, Borrego, & Olle, 2011) to the population being surveyed, and is found to have a strong positive correlation with response rate for postal, e-mail and web surveys. There is substantial evidence to support the hypothesis that people are more likely to participate in a survey when presented with a questionnaire that they believe has high topic salience. Conversely, gaining cooperation from survey participants is more difficult when the topic salience of the questionnaire is low because such questionnaires provide little motivation to respond (Barrios et al., 2011). Groves, Singer and Corning (2000) experienced an increase of 14.9 % in response rate by conducting a survey on a community related topic. Bean and Roszkowski (1995) argued

that topic salience has a greater influence on response rate than survey length. They noted that "*if a person attaches little interest or importance to the particular content of a survey, then it will not matter if the survey form is short; the person still is unlikely to respond*" (p. 25). On the other hand, Cook, Heath and Thompson (2000) failure to establish the relationship between topic salience and the response rate in surveys. In summary, there is some (mixed) evidence of the effect of the importance of topic salience on response rates to surveys. However, e-government is an important topic from both citizens and local governments' perspectives. Respondents might perceive that responding to a questionnaire will help local governments in improving their online services, which indirectly benefits them and therefore they might see themselves as having an interest in participating in the survey. With this factor in mind, a statement about the objective of the survey and the possible benefits of responding was included in emails containing the survey link.

#### **D. Cash incentives**

In mail surveys, incentives such as gift vouchers, cheques, or cash can be included in the survey envelope. Web surveys can usually provide incentives that are easily transferred within an electronic environment, such as redeemable loyalty points, donations to charity, gift certificates or electronic cash (Görizt, 2006). Church (1993) concluded from a meta-analysis of 34 studies, that people respond more favourably to incentives that are included with the questionnaire rather than those that are promised upon questionnaire completion. Porter (2004) reported two studies in which the response rate increased by 18% and 12%, while Groves et al. (2000) experienced an increase of 23.7% by including cash incentives with the survey instruments. Although the relationship between response rate and incentive is not always linear, researchers widely agree that if incentives are provided in order to increase the response rate, they need to be given in advance instead of being made contingent upon the return of the (offline) questionnaire (Görizt, 2006). However, Hager, Wilson, Pollak and Rooney (2003) reported no significant change in response rate even after combining a cash incentive with survey instruments and a promise of additional amount for a completed survey. Görizt (2006) carried out two meta-analyses on the effectiveness of incentives in web surveys and reported that for the first analysis, comprised of 32 experiments, an incentive motivated people to begin a web survey, and that for the second analysis, comprised of 26 experiments, and incentive motivated people to complete a web survey. Conversely, Porter's (2004) study found that incentives offered in online surveys resulted in a drop in response rate compared to those surveys in which no incentives were offered. An experiment by Birnholtz, Horn, Finholt, and Bae (2004) found that cash is a superior incentive for an online survey. Since the effects of incentives on

response rate are generally positive (although mixed), it was decided to offer the chance to win a NZ\$500 gift voucher redeemable for consumer electronics or movie passes or books, to improve the survey response rate. However, it is worth noting that according to Kehoe and Pitkow (1996), an incentive might introduce systematic bias in the responses.

#### **E. Pre-notification and reminder**

Pre-notifications inform potential respondents that the survey will be arriving, which reduce the chance that the survey or e-mail will be inadvertently thrown away. Dillman (2000) found that one of the best ways to ensure a good response rate is to send out pre-notification messages followed by a copy of the survey along with a cover message, followed finally by one or more further contacts with non-respondents. Experimental studies agree on the positive effects of pre-notifications and reminders on response rates (Fan & Yan, 2009). While follow-up communications are not constrained by a research budget in web surveys, Kaplowitz et al. (2004) found that reminder email notifications did not produce higher response rates. Shih and Fan (2008) found that follow-up reminders were less effective in web surveys than in mail surveys. Similar results were found in another meta-analysis of 45 studies comparing web and other survey types (Manfreda et al., 2008). Manfreda et al. found that the response rate to web surveys tends to be lower than the response rate to other survey modes, and that the difference in response rates increases with the number of communications made because multiple communications have a limited impact on the response rate in web surveys.

For this study a notification email was sent to participants (sampling procedures are outlined in 4.5.7), which introduced the researchers and included such details as the study background, the name of the institution backing the study, the study's objectives, the survey length, and the importance of participation. Also included in the email was the statement 'Thank you for your participation' as well as the website link to the survey. The email also contained the statement 'You must be 18 years or older to participate and only one completed survey response is allowed from an IP address', which was followed by further details regarding the survey prize draw incentive. Finally, the two contact persons' names, email addresses, and phone numbers were provided for those who might want more information.

#### **F. Subject line or personalisation**

Trouteaud (2004) found that a positive impact on survey response rates could be achieved by adding a plea for help in the subject. Smith and Kiniorski (2003) found that emphasising

the potential benefits of participating a survey in the email subject line (such as the opportunity to win prizes and express oneself) yielded higher response rates than subject lines that merely appealed for help. Henderson (2011) carried out web surveys in the USA, Canada, and Europe to test the effect of subject lines on response rates and found that the response rate increased by over 20% in all three countries when a polite request (i.e. 'please provide feedback') was added to the subject line. The personalisation of invitations (e.g. personalisation of salutation, name of organisation, the name of sponsors and signatures etc.) has consistently been found to be a significant predictor of increased response rates. Most of the personalisation tactics used in surveys positively influence response rates in web surveys (Porter & Whitcomb, 2003). However, personalised e-mail addresses were found to be an insignificant factor on response rates (Wiseman, 2009), although requests from a known person were found to improve response rates in web surveys. For this study, the statement 'It would be a great help to my research' in the body of the notification email, and 'local government survey' was added to the subject line. All subjects were contacted through their known contact persons.

### **G. Deadlines**

A review of the literature on response rates to surveys reveals that the perception of scarcity (a mentality that can limit one's potential) can influence response rates, because people have a tendency to view scarce opportunities as being more valuable than more common opportunities. In survey research, both the positive and negative effects of this on response rates have been reported (Wiseman, 2009). Several meta-analyses indicate that deadlines have no impact on response rates (Yammarino et al., 1991). Conversely, an experiment using a web survey of high school students found that the inclusion of a deadline in a covering letter will not decrease the response rate, but most likely will not increase it either (Fan & Yan, 2009). In view of these inconclusive findings, in the current study the survey was kept open for a month and no information was given to participants regarding the survey deadline.

#### **4.5.2 Developing a measure for the study**

This section discusses the procedure followed in constructing the items used in the survey instrument. Wherever possible, items used for the constructs were adapted from prior research in order to ensure the content validity of the scale used (Luarn & Lin, 2003). A few of the item scales were derived e-commerce, Internet banking and IS literature, and these will be tested in an e-government context. For scales development, the following steps were followed.

#### 4.5.2.1 Specifying the domain of the construct

In the first step, the researcher specified the domain of the construct. Based on the literature review, a conceptual framework for understanding e-government was proposed (Figure 3.2 in chapter 3). The framework defined a range of variables or factors that have an effect on the adoption or use of e-government information and services by citizens. Some definitions were adapted directly, while others were changed in order to fit the context of the investigation.

#### 4.5.2.2 Generation of item scales

The second step was the generation of item scales. At this stage, measurement items for each variable were selected by reviewing e-government, e-commerce and Internet banking literature. Additionally, some wording was altered to fit an e-government service context. The researcher's aim at this stage was to create an item pool to measure the variables identified in the proposed framework.

#### 4.5.2.3 Operational definitions of variables

Table 4.2 shows the relevant variables that have been incorporated into the framework. It also provides brief explanations of the variables as well as their operational definitions as used in this study.

Variable	Original definition	Definition used in this study
Expectations	The understanding of what citizen want from e-government services (Bertot et al., 2008)	Expectation can be defined as the information and services citizen wished their local government should provide online.
Awareness	The perception of elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future (Endsley, 1995).	Awareness can be defined in an e-government context as the state or quality of being aware of the availability of services provided by government online.
Motivation	Motivation is driving force that drives an action towards a desired goal(Wikipedia,2012)	In an e-government context, motivation can be defined as a citizen's subjective feelings of joy, elation, pleasure, and the positive holistic experience in the use of online government information and services.
Relative advantage	Relative advantage is often referred to in terms of convenience, savings of time and effort, and decreased discomfort in adopting or using an innovation. It is domain and environment specific (Rogers, 1995).	The degree to which a citizen believes that using e-government information and services are less-time consuming, convenient, and cheaper, and provide better quality, greater control and higher flexibility over traditional channels.
Trust	Trust is a set of specific beliefs dealing primarily with the integrity (trustee honesty and promise keeping), benevolence (trustee caring and motivation to act in the truster's interest), competence (ability of trustee to do what the truster needs), and predictability (trustee's behavioral consistency) of a particular e-service vendor (Luarn & Lin, 2003).	Trust is a set of specific beliefs dealing with the integrity, benevolence, and competence of e-government service delivery. Here, integrity means government honesty and promise keeping in securing the privacy and safety of citizens' information, caring for citizens' interests (benevolence), and having the ability to meet citizens' needs (competence).
Importance	Importance refers to the state or quality of being significant, influential, or worthy of note	Importance in e-government context refers to the significance of online government services to citizen.

Table 4.2: Variables and operational definitions of the study's research model

### 4.5.3 Questionnaire construction

The order in which questions are asked can affect responses as well as the overall data collection activity. The effects of adjusting answers to succeeding questions based on the answer of the previous questions has been a subject of numerous studies (Babbie, 1990; Dillman, 2000). Dillman (2000) indicated five distinct situations in which answering one question may influence responses to later questions.

- *The norm of even-handedness(an equitable treatment to all question of a survey):* This occurs when there are similarities in questions and they are placed next to each other. Some researchers (G. Bishop, Hippler, Schwarz, & Strack, 1988) argued that even-handedness is likely to occur more in telephone surveys than in web surveys, since in the latter respondents can view all the questions before answering and can adjust answers accordingly.
- *The anchoring effect:* The anchoring effect is a form of suggestibility whereby the response to the first opinion question serves as an anchor for the second answer. In other words, respondents can give answers to questions based on his or her preferences as well as their answer to the previous question (Dillman, 2000).
- *The addition effect:* In a survey, Schuman and Presser (1981) identified that a percentage of participants responding to a general question varied when a specific question was asked before a general question. The authors explained this as being the result of respondents continuing to think about the specific question and while answering the second, more general, question.
- *The subtraction effect:* The opposite of the addition effect is reported in another study (Mason, Carlson, & Tourangeau, 1994) in which the authors noticed that respondents tended to 'subtract' out reasons used to justify their answer to the preceding question.
- *The summary item effect:* Willits and Saltiel (1995) illustrated that responses to summary question tend to score low if it is asked before a list of questions relating to the domains that are summarised.

From the extant literature on this topic, it is noticeable that there has been a debate with regards to the advisability of different approaches to placing multiple items of constructs on a questionnaire. Some researchers have suggested that items for all constructs should be randomly placed so that no two items of a construct are adjacent (Babbie, 1990; Goodhue, 1998), while others (Davis & Venkatesh, 1996) have argued that intermixing of questions creates difficulty for respondents as they are required to switch their attention continually

from one topic to another. The measures from intermixed questions are more correlated with related variables than grouping the questions (Goodhue & Loiacono, 2002). However, Goodhue and Loiacono noticed that although intermixing improves the path coefficients, it is not significant and concluded that intermixing of questions is suitable for newly developed items and constructs. Since the constructs of this study were strong and well tested in prior studies, the researcher assumed that it might not be the best context for testing the impact of questions order on measurement quality. Dillman (2000) suggested making half of the questions in one order and half in another. Babbie (1990) suggested constructing more than one version of the questionnaire, each version containing a different possible ordering of questions, and then pre-testing the various versions of the questionnaire to determine different possible ordering effects.

It is important to recognise that a questionnaire cannot be considered as a compilation of completely independent questions that have no effects on one another, even though similar questions are placed separately. This is because respondents might evaluate each question on the basis of its individual content, as well as broader content, and adjust their answers accordingly (Dillman, 2000). Considering the pros and cons of arranging questions in a questionnaire, the current study decided to place all items measuring a construct adjacent to each other, which is consistent with several prior studies (Agarwal & Prasad, 1997; Chan & Lu, 2004; Tan & Teo, 2000).

#### ***4.5.3.1 Designing the survey instrument***

With the graphic and multimedia capabilities of the World Wide Web, a researcher has an almost unlimited set of design choices in developing a survey for administration on the web. However, relatively little is known about the standards for designing web questionnaires. Couper (2001) observed that web questionnaires are often designed by people with no training in survey methodology, resulting in poor questionnaire design. Dillman (2000) wrote that people tend to not donate their time towards completing a survey if they find difficulties in completing the task due to confusing questions, poor directions, or lengthy questions. Manfreda et al. (2002) listed several examples of the most common mistakes in web questionnaire. These include: failure to clearly state the survey's thematic and chronological references; writing questions containing more than one thematic reference; and the use of expressions and phrases which are unknown to the respondent.

Couper (2001) advocated the web as a specific medium with special design options, visual features, and required respondent actions, all of which requiring special attention to the crafting of the questionnaire. Manfreda et al. (2002) suggested that although the design of a web survey questionnaire is more complex than the design of a paper questionnaire, the basic principles for paper questionnaire design can be applied to the web. Such principles include keeping questions short and avoiding combined questions. Bethlehem and Biffignandi (2012) indicated that even small differences in question wording or the stimuli embedded in the question display may greatly affect the answer given. It should be also noted that a range of validity checks not possible in a paper-based survey can be included in a web survey to improve the quality of data. On the subject of data quality issues between different modes of survey, Cobanoglu et al. (2001) found that mean scores for data collection using a web survey are the same as for mail and fax surveys. Similar results were reported by another study using an experimental design to compare paper and web surveys (Bethlehem & Biffignandi, 2012).

Care was taken in designing the survey questionnaire in this study, including the use of graphical features to illustrate survey questions and motivate respondents. The survey questionnaire was divided into five sections. An introductory section provided information about the survey, its objectives, sponsor name, the researcher, and the study supervisor's name along with contact details for questions or further information. Following this was a demographics section, in which answers were optional. The main research questions were addressed in two subsequent mandatory sections, where participants were expected to choose from a range of possible answers provided for each item. While the items of this study were adopted from prior research, attention was given to content validity, readability and the formatting of the items in order to minimise the chance of the misleading and inaccurate recording of responses. Further, emphasis was given to the original items and the items that were used in most studies. The final section was an optional information section where respondents could make further comments and indicate if they wished to participate in the prize draw and/or receive a summary of the survey findings. The survey was designed using a frequently used template of SurveyMonkey, the web survey hosting service provider ([www.surveymonkey.com](http://www.surveymonkey.com)).

#### **4.5.3.2 Choosing the first question**

According to Dillman (2000) the first question in a questionnaire is more important than any other item since it influences whether the survey will be completed by the participant or not. Potential respondents tend to casually glance through the first few questions before

they start answering. Success in understanding and answering the first question motivates respondents to continue. Babbie (1990) suggested beginning the questionnaire with the most interesting questions. Alternatively, one can use a question that respondents would be keen to express an answer to and is likely to apply to everyone (Dillman, 2000). The question must be easy to comprehend and answer. It should not be a long question or an open-ended question. There are many well-designed surveys that start with age or education because it applies to everyone and is easy to understand. However, such surveys have received poor responses due to the lack of connectedness between the objectives of surveys and the understanding of respondents (Babbie, 1990; Dillman, 2000). Therefore, researchers (Babbie, 1990; Dillman, 2000) proposed not to start a questionnaire with demographic questions. However, several studies found that placing demographic questions at the beginning of a questionnaire did not affect the response rate. In this study, the demographic questions were placed at the beginning of the survey (section A), followed by general questions (section B), moving to narrow specific ones (section C). The open-ended question (section D) is kept toward the end, just prior to the additional optional questions. As noted, the answers to questions under section B and C were made mandatory (i.e. cannot be skipped). An error message 'please answer the question' was displayed on the screen when users attempted to bypass a mandatory question without giving an answer.

#### **4.5.3.3 Items scale for variables**

Table 4.3 presents the questionnaire items for the variables in the research framework. The items of *expectation* were adapted from e-government challenges (Jorgensen & Cable, 2002) and public expectations from e-government studies (Jain & Patnayakuni, 2003) to measure citizens' expectations of information, communication and service delivery via local e-government. This information will also assist in identifying gaps that may exist between citizens' expectations and perceptions and what is being actually delivered and promised by their local councils. The scale for awareness was measured using a single item adapted from IT governance (Yap et al., 2010), user satisfaction (Verdegem & Verleye, 2009), adoption of e-government services (Sohail & Shanmugam, 2003) and e-banking (Saade, Nebebe, & Mak, 2009). Motivation, both extrinsic and intrinsic, was measured using four items adapted from a study of e-learning (Lin, 2007) using the TAM model (Davis, 1989) to understand students' motivation, knowledge sharing using the theory of reasoned action (TRA) (Wang, Chang, & Heng, 2004), IS adoption (S. Al-Adawi & Morris, 2009; W. Huang, D'Ambra, & Bhalla, 2002) and e-government services adoption (Moore & Benbasat, 1991). With respect to relative advantage, the construct is defined and used differently in several studies that indicate an increase in productivity, effectiveness and

performance (Moore & Benbasat, 1991). Tormatzky and Klein (1982) suggested that this is a measurement issue, which could lead to a plethora of scales and terms.

Variable	Items	Adapted from
Expectation	<ol style="list-style-type: none"> <li>1. What information would you expect to be able to access from your local council?</li> <li>2. What local council services would you expect to be able to access online?</li> <li>3. What types of communication with your local council would you expect to be able to conduct online?</li> </ol>	Jain and Patnayakuni (2003), Jorgensen and Cable (2002)
Awareness	<ol style="list-style-type: none"> <li>1. I am aware of the range of online information and services offered by my local council</li> </ol>	Verdegem and Verleye (2009), Susanto, Goodwinc and Calder (Susanto et al., 2008), Sipior, Ward and Connolly (2010), Saadé et al. (2009), Wang et al. (2004)
Motivation	<ol style="list-style-type: none"> <li>1. I am satisfied with the availability of online information and services from my local council</li> <li>2. I am satisfied with the support provided for me to use online information and services from my local council</li> <li>3. I usually with obtain the information or receive the services I am seeking online via my local council website</li> <li>4. I am motivated to use online information and services from my local council</li> </ol>	Wang et al. (2004), Lin (2007), Al-Adawi and Morris(2009), Huang et al.(2002), Plouffe et al. (2001), Gefen and Straub (2000)
Relative advantage	<ol style="list-style-type: none"> <li>1. Using online information and services from my local council is less time-consuming than face-to-face or telephone interaction</li> <li>2. Using online information and services from my local council is more convenient than face-to-face or telephone interaction</li> <li>3. Using online information and services from my local council is cheaper than face-to-face or telephone interaction</li> <li>4. Online information and services from my local council is of higher quality than from face-to-face or telephone interaction</li> <li>5. Using online information and services from my local council fits the way I like to do things</li> <li>6. Using online information and services from my local council provides me with better control than face-to-face or telephone interaction</li> </ol>	Carter and Belanger (2004), Carter and Weerakkody (2008), Slyke et al.(2008), Sang, Lee and Lee (2009), Gupta and Jana(2003), Gefen, Karahanna and Straub (2003), Schauppp and Carter (2010)
Trust	<ol style="list-style-type: none"> <li>1. I am confident that my personal privacy and information will be safe using online information and services from my local council</li> <li>2. I am confident that online transactions I conduct with my local council will be secure</li> </ol>	Carter and Belanger (2004), Carter and Weerakkody (2008), Jarvenpaa, Tractinsky and Vitale (2000), Verdegem and Verleye (2009)
Importance	<ol style="list-style-type: none"> <li>1. It is important to me that my local council provides online information and services</li> </ol>	Verdegem and Verleye (2009)
Gender	<ol style="list-style-type: none"> <li>1. What is your gender?</li> </ol>	Luarn and Lin (2004), Tan and Teo (2000), Podder (2005)
Age	<ol style="list-style-type: none"> <li>1. What is your age?</li> </ol>	
Internet accessibility	<ol style="list-style-type: none"> <li>1. Do you currently have access to the Internet?</li> </ol>	
	<ol style="list-style-type: none"> <li>2. Do you have access to a broadband Internet connection?</li> </ol>	
	<ol style="list-style-type: none"> <li>3. From where do you access the Internet the most?</li> </ol>	
Usage of the service	<ol style="list-style-type: none"> <li>1. Have you ever visited your local council website?</li> </ol>	Lederer, Mauphin, Sena, and Zhuang (2000), Podder (2005))
	<ol style="list-style-type: none"> <li>2. How often do you use the Internet to access information or services from your local?</li> </ol>	
Region	<ol style="list-style-type: none"> <li>1. Please indicate what region of New Zealand you are located in?</li> </ol>	Abdelsalam, Elkadi, and Garmal (2010), Flak et al. (2005)

**Table 4.3: List of items by variable**

For this study items for the relative advantage construct were adapted from e-government adoption (Carter & Belanger, 2004; Carter & Weerakkody, 2008), IS innovation (Moore & Benbasat, 1991; Slyke et al., 2008) studies, Internet banking adoption (Tan & Teo, 2000),

and an e-payment study (Plouffe et al., 2001). The items of *trust* were adapted from adoption of e-filing (Schaupp & Carter, 2010), online shopping (Gefen et al., 2003; Jarvenpaa et al., 2000), e-services (Luarn & Lin, 2003), and acceptance of e-government services (Carter & Belanger, 2005; Carter & Weerakkody, 2008). A single item for *importance* was adapted from the study on user satisfaction in e-government by Vendegem and Verleye (2009) to investigate the citizens' perspective in evaluating information and services that their councils provide online. Items for actual use construct were adapted from Lederer et al.'s (2000) study. Items for demographic variables such as gender, age, computer, Internet access experiences were adopted from previous studies (Luarn & Lin, 2004; Podder, 2005; Tan & Teo, 2000). Item for region construct was adapted from Abdelsalam et al. (2010) and Flak et al.'s (2005) studies. Wording of the items were changed to suit e-government study.

#### **4.5.4 Pre-testing**

Prior to the primary survey it was considered essential to validate the survey instrument through pre-testing in order to identify if there were any ambiguous questions, threatening or embarrassing questions, problems in understanding questions, or suggestions for the revision of the questionnaire (Riemenschneider, Harrison, & Mykytyn, 2003). In other words, pre-testing was considered essential in order to ensure that measurement scales were adapted and developed appropriately to the context. Once the measurement items were developed, the questionnaire was assessed by three people: a Professor and a lecturer from AUT University and an e-government services development expert from a local council IS department. In the pre-testing process, respondents were asked to give their opinion regarding the following:

- Clarity of instructions given in the questionnaire.
- Clarity of question wording (i.e. if any questions were unclear or ambiguous).
- If there were any unnecessary or repeat questions.
- If any questions difficult for the respondent to understand or answer.
- Any other comments.

The pre-testing of the questionnaire elicited valuable comments from respondents with regards to the questions. After reviewing these comments, some initially included items were omitted since they were found to be repetitive or not to fit the context of the research. Some items were retained without change, while others were further revised to better match the context of the study. It was ensured during changes to the questionnaire that no important attributes were omitted which may have been important for the specific

context of this study. The final questionnaire and invitational letter are included in Appendix C and D respectively.

#### **4.5.5 Pilot test**

In order to detect weaknesses in the design of the instrument and to download and check data from the hosting service provider's database, a pilot test was conducted before progressing with the final study. Ten people from the researcher's office were selected for the pilot testing. The introductory email along with the survey link was distributed amongst participants. Each respondent was requested to comment on 1) the time taken to complete the survey, 2) the design and flow of the survey, and 3) any other issues. There was no comment on any survey item and all participants found the survey easy to understand and answer, and short and simple in structure and design. The data file was downloaded using the web link provided by SurveyMonkey and loaded into Microsoft Excel. The data integrity was checked and logic checks were carried out to ensure data correctness.

#### **4.5.6 Ethical approval**

Since this study intended to collect data from individuals prior approval was required from the AUT University's Ethics Committee. An application along with the questionnaire was forwarded for ethical approval and the approval for conducting survey was subsequently received.

#### **4.5.7 Sampling**

When conducting web surveys, researchers can encounter problems with respect to sampling (Andrews, Nonnecke, & Preece, 2003). For example, relatively little may be known about the characteristics of people in online communities aside from some basic demographic variables, and even this information may be questionable (Dillman, 2000). A number of web survey organisations provide lists of their pre-registered members, who are available to participate in surveys, but those services are expensive and there is no guarantee that the listed participants will provide a representative or unbiased sample. Of course, in any given Internet community, there are undoubtedly some individuals who are more likely than others to complete an online survey, which leads to a systematic bias (Thompson, Surface, Martin, & Sanders, 2003). Several problems are discussed in the literature about sampling while conducting online surveys. But these problems are not unique to online survey research. Mailed surveys suffer from the same basic limitations. While a researcher may have a person's mailing address, he or she does not know for certain whether the recipient of the mailed survey is the person who actually completes the

survey. Moreover, respondents to mailed surveys can misrepresent their age, gender, level of education, and a host of other variables as easily as a person can in an online survey. Even when the precise characteristics of a sample are known by a researcher, people can still respond in socially desirable but dishonest ways or otherwise misrepresent their identity or responses in a survey.

Obtaining a sample is necessary, since collecting data from the entire population is impractical or impossible and unnecessary in the majority of studies. The sample should also be unbiased and large enough to satisfy the needs of the research project (Hussey & Hussey, 1997). The two approaches to sampling are probability and non-probability sampling. Probability sampling is used more commonly where there are issues of generalisability and/or drawing statistical conclusions (Hair et al., 2007). Non-probability samples, on the other hand, are chosen during exploratory phases and during the pretesting of survey questionnaires. Hair et al. propose three principal questions for determining the course of the research process: (1) whether a sample or census should be used, and, in the case of sampling, (2) which sampling approach to use, and (3) how large the sample should be. The researcher's aim is to collect a small but representative unit of cases from a large population, from which the researcher can produce accurate generalisations about the larger group. Fricker (2008) indicated that an appropriately selected sample can advantages, including low cost, improved accuracy, and decreased administration effort. This study has followed the guidelines provided by Hair et al. in determining a representative sample.

#### ***4.5.7.1 Defining the target population and sample frame***

The target population is defined as “*the complete group of objects or elements relevant to the research project*” (Hair et al., 2007). This study includes entire population of New Zealand with Internet access and aged 18 years and over. Hair et al. (2007) defined the sampling frame to be a working definition of the target population, such as a directory listing of businesses or a university registration list. It may not be possible to achieve such a finely tuned sample frame for this research, since it is not possible to access a list of the residents or ratepayers for every council in New Zealand, due to 1) the fact that councils do not have email addresses of all ratepayers, and 2) privacy laws prevent councils from releasing such information to others. Further, given that councils in New Zealand administer populations from 640 (Chatham Islands) to 1.486 million (Auckland) people, setting a sample frame that constitutes equal representation from every council would have been a vast, impractical and difficult to justify task. Also, non-ratepayers, who do business with councils, would have been left out of the sample frame. In order to determine a workable

sample frame, the sample frame was set to the list of citizens registered with Residents Associations in the 16 regions of New Zealand. This sample frame covers more than one council in every region except one, the Auckland region, which only has one council, the Auckland Council. Sampling using the Residents Associations did not produce a sample that is strictly representative of the population of local councils across New Zealand. Rather it sampled people with an interest in their local council. If the sample has a bias, it is towards the people who are most informed about local government issues and would therefore be most likely to have an opinion on expectations of local e-government.

Table 4.4 shows the population sizes for the 16 regions (which may include multiple local councils), which vary between 32,900 and 1.486 million. Thus, it should be noted that the population for the sample frame consists of a part of the total population in New Zealand. Citizens who were not listed with ratepayer and residents' associations, or who lacked an email address, were not included in the sample frame.

<b>Region</b>	<b>Population</b>
Auckland Region	1,486,000
Bay of Plenty Region	277,100
Canterbury Region	560,700
Gisborne Region	46,600
Hawke's Bay Region	155,300
Manawatu-Wanganui Region	232,400
Marlborough Region	45,600
Nelson Region	46,200
Northland Region	158,200
Otago Region	209,900
Southland Region	94,900
Taranaki Region	109,700
Tasman Region	48,100
Waikato Region	413,100
Wellington Region	487,700
West Coast Region	32,900
Total	4,404,400

**Table 4.4: Region-wise population**  
(<http://www.stats.govt.nz>) (as of 01/07/2012)

Hair et al. (2007) mentioned several possible flaws that may be present in sampling frames, such as elements that do not belong to the frame, or duplicate or out-of-date elements. The first possibility (elements that do not belong) was addressed in this study since only members 18 years or older and with email addresses were requested. For the other possible flaws that pertain to email addresses, duplicate emails were removed from the email database. Hence significant attention was given to minimising procedural flaws within the

selected sample. Fricker (2008) argued that in all forms of data collection through surveys, it is required that one makes compromises and it is critical for researchers to have a greater understanding of and control over the trade-offs they implicitly or explicitly make when choosing a sampling method for collecting their data.

#### **4.5.7.2 Selecting the sampling method**

The sampling method was selected taking into account two major research constraints: the nature and objectives of the study on the one hand, and the budget constraints of the study on the other (Hair et al., 2007). Several types of sampling methods are available for collecting data, including simple random sampling, systematic sampling, stratified sampling, cluster sampling, and multistage sampling. In probability sampling, the intent is to deploy a procedure that allows an element of random, non-zero chance of being selected. As this study intended to have representation from every region of the country and from people over 18 years of age, random probability sampling or systematic sampling could have been conducted, perhaps using a telephone directory for each region within New Zealand, and then by using a simple random sampling of the addresses and phone numbers listed.

However, there are several disadvantages to this method. This would result in a very large number of phone calls or letters to acquire the email addresses, which would greatly increase research costs without ensuring a predictable response rate. The use of cluster and multistage cluster sampling is ruled out, since there are no particular or significant characteristics within the target population that can focus the identification of clusters. A stratified sampling method was found suitable as it would warrant some kind of differentiation based upon demographic features of the sample; in this case, regional location. To achieve further representativeness within the stratified sample, systematic sampling was then conducted within the chosen frame. Systematic sampling involves the random selection of an initial starting point on a list, thereafter proceeding with every *n*th element in the sample frame. Simplicity and flexibility are the major advantages of systematic sampling (Cooper & Schendler, 2001). For this research, systematic random sampling was implemented within the sample frame for each region of New Zealand. A possible flaw with the results obtained through this method might be that more people may respond from one region than from another. This may have presented a problem in achieving representativeness if one region within New Zealand showed characteristics significantly different to that of another municipality. However, we do not have any evidence that this is the case. As a result, there should be no such problem in achieving

relative representativeness as long as it meets the sample size requirement, which is dependent on the number of variables and parameters in the research model.

#### **4.5.7.3 Sample size**

In the literature it is understood that deciding a sample size is a complex process. It is something that depends on the kind of statistical analysis proposed, the anticipated response rate, and the expected variability within the samples and the results (Hussey & Hussey, 1997). Newton and Rudestam (1999) suggested that survey cost and time are also to be considered. On the one hand, if the sample size taken is made too small, e.g. in order to suit the budget, many statistical tests will not work well due to the small data size. On the other hand, while results might be tenable for a large sample size, due to the high costs and amount of time required to survey large groups, such surveys may not be feasible to carry out. There are number of guidelines or rules of thumb that have been developed to assist researchers in selecting sample size. For example, Newton and Rudestam suggested a 4 to 1 ratio of responses to items. Others suggest a 10 to 1 ratio. For this study, if we consider a 10 to 1 ratio, for a 26 item questionnaire there should be 260 responses. Also, there would be some incomplete and incorrectly filled out questionnaires, and if those are estimated to be 10% of the responses received (Newton & Rudestam, 1999), then the required number of responses would be nearly 300. Now the typical response rate from a web survey varies between 5% and 12% and is decreasing over the time. If we consider that the current survey would generate about a 10% response rate, a sample size of 3000 email addresses would be required for this survey. In another calculation, authors (Newton & Rudestam, 1999) conducted a power analysis, assuming a multiple regression analysis with  $r^2$  value (effect size) of 0.1 and recommended sample size as below:

$$SampleSize = \frac{Total\_response\_required}{response\_rate \times (1 - r^2)}$$

(Assume: a multiple regression analysis with  $r^2$  (effect size) of 0.1)

If we follow a similar approach, we require 2700 subjects to be surveyed in order to get 300 responses, with a 10% response rate and  $r^2$  value of 0.1. Using another calculation, from Dillman (2000), the sample size was estimated as 2000 with a  $\pm 3\%$  sampling error, and a 50/50 expected variation in answers to the question of interest. Having considered different approaches for sample size calculation, time requirement, and available resources, the decision was made to survey 2500 subjects for this study. It was also decided that 100-125 responses would be collected from the Auckland region, since it is made of 8 councils and has nearly one third of the total population of New Zealand, and 12-15 responses will

be collected from each of the remaining 15 regions, in order to ensure a degree of regional representativeness.

#### **4.5.7.4 Survey error**

Salant and Dillman (1994), and Dillman (2000) recommend that researchers conducting surveys should take necessary steps to minimize four potential sources of error: sampling error, measurement error, non-response error, and non-coverage error.

*Sampling error* is the degree to which the selected sample fails to represent the general population, and is caused by the exclusion of certain members of the population from the sample group. Several studies have suggested increasing the sample size to decrease sampling error when simple random sampling is used. For example, when the sample size is increased from 400 to 1000, the sampling error decreases from 5% to 3%, which is an acceptable trade-off between estimate precision and research costs (Cui, 2003; Dillman, 2000). Therefore, in this study, the sample size of 2500 was considered to minimise the sampling error. According to Dillman (2000), and Cui (2003), some members of the sample simply do not respond to the survey, irrespective of the types of survey followed during a sample selection. In a previous section, techniques to raise the survey response rate were discussed at length, and an emphasis was placed on editing techniques and quality assurance practices in order to ensure that there was no data loss, no duplication, and no inaccurate weights in the estimation procedure. Although the format of the questionnaire and the validation checks included in the mandatory sections work to reduce the chances of entering incorrect data, processes such as checks, logic edits, and range edits (valid ranges were entered) were also included in order to minimise error. However, such techniques can only minimise measurement error (Newton & Rudestam, 1999).

*Measurement error* results when the respondent fails to follow instructions on how to complete the survey, does not respond to specific questions, or supplies inadequate answers that cannot be compiled in any useful way with responses from others (Dillman, 2000). Measurement error is defined as the difference between the answer given by the respondent and the true value that applies to that answer. There are several causes of measurement error that have been discussed in the literature. Out of these causes, two main sources of measurement errors are found commonly discussed in web surveying; namely, the wording and the flow of the questionnaire and the visual layout of the questionnaire. With respect to the wording of questions, there are no specific recommendations for web questionnaires as opposed to other questionnaire types, so long

as they adhere to general standards for the correct formulation of questions in survey research. However, it has already been discussed in the earlier section that the problem arises because web questionnaires are often designed by people inexperienced in survey methodology. Couper (2001) highlighted several examples of the most common mistakes in web questionnaire wording. Regarding the flow and design of the web questionnaire, Couper advocated that the web is a very special medium with special design options, visual features and required respondent actions, all of which require special handling of the questionnaire. Dillman (2000) suggested that each question should be presented in a conventional format similar to that normally used in self-administered paper questionnaires. In light of this research, every effort has been made to reduce the magnitude of measurement error by focusing on the graphic layout, presentation of questions, number of questions per page of the questionnaire (Dillman, 2000), and the evaluation process as recommended by Esposito (2002).

Couper (2001) argue that web questionnaires may be the ideal medium for conducting surveys, presenting few coverage and sampling problems. *Non-response* may occur at any stage of the web survey process, including during the invitation to the survey, the survey review, the questionnaire answering stage and/or the transmission of responses. Non-response mainly depends on the respondent's characteristics, social and technological environment, and survey design features such as the design of the web questionnaire (Groves et al., 1999). The impact of these factors on unit non-response is discussed in detail by the authors and several suggestions to reduce non-response bias impact are given in the literature. The type of non-response that occurs during questionnaire completion whereby respondents prematurely abandon the questionnaire is mainly due to the design of the questionnaire itself. We have discussed the design-related aspects of web questionnaires, which can reduce the non-response error, have been discussed earlier. Furthermore, it is also found that respondent satisfaction influences the initial decision to participate in a survey, as well as continued participation until the end of the questionnaire. It is therefore important that the design of the web questionnaire provide enjoyment and satisfaction to respondents, in order to increase their interest and convince respondents to answer all survey questions and thereby minimize non-response. There are several measures aimed at maintaining interest in web surveys, including simple questionnaires, incentives, constant contact with participants, the instillation of a sense of community, the opportunity to email back, and the keeping of one's promises (Manfreda et al., 2002). In the current survey, attention was paid to the wording, flow, and graphic layout of questions in the questionnaire at the time of questionnaire development and during the pre-testing

and pilot survey phases. Attention was also given to making the questions interesting and easy to follow.

Couper, Kapteyn, Schonlau and Winter (2007) found that *non-coverage* appears to be of greater concern than non-response for representation in web surveys, especially for older age groups. However, with increasing Internet usage, the weaknesses of web surveys targeted to the general population are slowly being overcome and it is becoming easier to contact participants for web surveys (Manfreda et al., 2002). While citizens without Internet access are not covered in this survey sample, the target population is citizens who have the ability to use online government services and thus those members of the population who do not have Internet access have been excluded from the sample frame.

#### **4.5.8 Survey distribution**

It was planned that 625 email addresses would be gathered from Auckland region, and 125 email addresses would be gathered from each of the 15 regions in New Zealand (as shown in Table 4.5). The following processes were carried out:

1. The National Residents' Associations Database was located on the Internet (<http://www.residents.org.nz/>).
2. The 'elected office holder' or the contact person for every Residents' Association were emailed or contacted by phone to inform them about the survey, its objectives, and why they were being contacted, with the exception of a few whose email addresses and/or phone numbers were either not correct or not present in the database. It was also mentioned in the email or phone call that this was the second phase of the current study, and that in the first phase representatives of most of New Zealand local councils were interviewed.
3. Most of the Residents' Associations agreed to participate in the study given its relevance and likely interest to their memberships, and provided lists of their members, only membership number without any personal details.
4. One Residents' Association agreed to put up the survey details on their website and requested their residents to participate, since they did not hold the email addresses of their members.
5. Table 4.5, shows how the sample was chosen from the list received from the Residents' Associations for each region. It shows the sample selected for every region was as per estimated except four i.e. Southland Region, Tasman Region and West Coast Region, where number of members provided were less than 125. The

Manawatu-Wanganui region, posted the survey on website instead of providing the list of their rate payers.

6. Using the selection criteria, as shown in Table 4.5, list of members for every region was prepared to be invited for survey participation. A total of 2339 sample was selected for all regions compared to estimated 2500.
7. The web survey was run from 15 of May 2012 to 15 of June 2012. Emails were sent to Resident Associations along with participant invitation letter (Appendix D) requesting them to forward the email their members, selected for this study. Reminder emails and phones calls were made to ensure all associations forwarded emails to their members.

Region	Sample size received	Selection criteria	Sample selected
Auckland Region	1235	Every 2 <sup>nd</sup> item up to 1220 and balance 15 items (i.e. 610 +15)	625
Bay of Plenty Region	141	First item and then from 17 to 141	125
Canterbury Region	207	First item and then 3 out of 5 items from item 3 to 207 (i.e. 1+ 3 *41)	125
Gisborne Region	249	First item then 1 out of every 2 items (1+124)	125
Hawke's Bay Region	367	First item then 1 out of 3 items from 2-364 and last 3 items( 1+121+3)	125
Manawatu-Wanganui Region		Posted on to website	0
Marlborough Region	141	First item then every item from 18 -141 (1+124)	125
Nelson Region	205	First item then 3 out of 5 up to 200 numbers and last 5 items (1+ 3 *40 + 4)	125
Northland Region	130	First item then every item from 7 to 130 (1+124)	125
Otago Region	145	First item then 6 out of every 7 items from 2-141 and last 4 items (1+120+4)	125
Southland Region	117	All items taken	117
Taranaki Region	129	First item then every item from 6 to 129	125
Tasman Region	93	All items taken	93
Waikato Region	252	First item and 1 out of 2 items from 5-252 (1+124)	125
Wellington Region	148	First item and then 124 picked randomly from 2 - 148 without any particular order	125
West Coast Region	119	All items taken	119
Total			2329

Table 4.5: Region-wise selected sample

#### 4.5.9 Response rate

Of the 2329 emails sent, 336 responses were received within one month of the survey between 15<sup>th</sup> May 2012 and 15<sup>th</sup> June 2012. Of these, four responses lacked some optional demographic data. Respondents were unable to bypass any question in the mandatory sections of the questionnaire, so the data from these sections were complete. Thus, all 336 responses were considered for further data analysis. This survey thus achieved a response rate of about 14%. This is an acceptable response rate given that response rates are generally decreasing in surveys (J. R. Evans & Mathur, 2005), particularly in web surveys

(Keusch, 2012), which generally produce lower response rates than other modes of survey (Manfreda et al., 2008). The higher response rate could be due to the invitation was sent through the residents' associations (Keusch, 2012). Considering the response rate achieved, it was decided not to leave the survey open for a further period as running for a longer period has been found not effective in improving response rate. Similarly, email reminders were not sent, as these have also been found not to enhance response rates (Kaplowitz et al., 2004) or to be less effective in web surveys (Shih & Fan, 2008) as they risk being perceived as spam (Manfreda et al., 2008).

#### **4.5.10 Analysis of online survey data**

Due to the exploratory nature of this study, exploratory data analysis employing primarily descriptive statistics (Cooper & Schindler, 2001) was considered suitable to report the survey results. As Cooper and Schindler note, "*Exploratory data analysis is the first step in the search of evidence, without which confirmatory analysis has nothing to evaluate*". Further, Cooper and Schindler also suggested that for an exploratory study, visual representation of data is more appropriate than statistical analysis. Consequently, bar graphs, pie charts and frequency tables were used to describe the data and to study the factors / issues that were perceived to have an effect on citizens' use of local government information services online.

#### **4.6 Local government interviews**

Selecting an appropriate method of data collection involves considering which method will maximise data quality in the most cost effective fashion. The objective in this part of the study was to collect data on e-government implementation and the factors influencing it from councils across New Zealand within the cost and time constraints of a PhD study. An interview programme was chosen in order to provide the researcher with the opportunity to pursue in-depth information and opinion from the respondents, and to explain or clarify the information sought. Despite the potential weaknesses in interview-based research, including that only a partial and incomplete understanding of the participant's point of view is obtained or that participants may respond in ways they deem socially desirable (Yin, 2009), interviews can be a cost effective method of accessing the beliefs, attitudes and understandings of participants (Harris & Brown, 2010). Given the geographical distribution of potential interviewees throughout New Zealand, telephone interviews were used. While face-to-face interviews allow the use of visuals in presenting questions, are recognised as better for asking sensitive questions and dealing with complex issues, and generate a better response rate, telephone interviewing is cheaper, easier to administer and requires a much shorter data collection time (Singleton, Straits, & Straits, 1999), allowing a larger number of

respondents to be interviewed, while still capable of producing high quality data (de Leeuw & Hox, 2004). Nevertheless, the amount of information given by respondents to open-ended questions is greater in face-to-face interviews than in telephone interviews (de Leeuw & Zouwen, 1988).

Given the research objective of this part of the study, a semi-structured interview format was chosen. In this case, a standardised set of open-ended questions were developed and used as the interview instrument. According to Bryman and Bell (2007), some of the advantages of semi-structured interviews include the ability to prompt, probe and collect additional data, reasonable flexibility in the sequence of the questions asked, and the opportunity to clarify any ambiguity. Further, with this format, the open-ended nature of the question defines the topic under investigation, but also provides opportunities for the interviewer and interviewee to discuss some topics in more detail. In contrast, structured interviews would have allowed less room for the interviewees to respond, while unstructured interviews would not have allowed for a set of predetermined questions to be asked (Bryman and Bell). The semi-structured interview was therefore found the most suitable for this study, because while information was required on certain factors, an open-ended approach left room for the interviewee to express their ideas and perceptions freely within the broad subject matter of e-government initiatives within their organisation.

#### **4.6.1 Raising the response rate**

A range of factors, both interviewer dependent and independent, were considered for their potential impact on the response rate in a telephone-based interview programme. These factors are discussed below.

##### **A. Interview length**

Collin, Sykes, Wilson and Blackshaw (1988) reported that in a telephone interview study, 14% of the contacted sample refused a 40-minute interview and 9% refused 20-minute interview. The researchers concluded that there were signs of non-cooperation for long interviews, although the percentage of such interviewees declining was less than might be expected. Sharp and Frankel (1983) found that 27% of people refused to be re-interviewed after a 75 minute interview, compared with only 13% after a 25 minutes interview. Although the length of a telephone interview was found to impact response rate, proposals for the ideal length of an interview were found to be inconclusive. For this study, it was initially decided to run interviews for one hour and 30 minutes to 2 hours. However, on

consultation with council officials the interview duration was dropped to a 45 minute duration, which proved to be a more acceptable length to potential interviewees.

### **B. Statement of confidentiality**

The evidence of the impact of this factor was discussed in section 4.5.1 of this chapter. To reassure interviewees who might be worried about the confidentiality of their responses, it was decided to include a standard confidentiality statement in the pre-notification email along with a consent form.

### **C. Salience**

The importance of topic salience in encouraging respondent participation was discussed in section 4.5.1 of this chapter. In this case, the relevance of e-government to the potential interviewees was considered to be high. Accordingly, a statement about the objective of the survey and the possible benefits of participation were included in the pre-notification email to interviewees.

### **D. Pre-notification and reminder**

Pre-notifications are intended to signal the approaching interview, prepare the intended interviewee, communicate the value of the study, and evoke the principal of social exchange (de Leeuw, Hox, Korendijk, & Lensvelt-Mulders, 2007). Dillman (2000) ratified this approach and further suggested a reminder to non-respondents in order to increase the rate of response. While Collins et al. (1988) suggested pre-notification could produce a negative effect on the quality of data collected as it provided recipients with advance warning, enabling them to prepare their responses before they are contacted, Leeuw et al. (2007) found that pre-notifications had positive effect on the response rate. For this study it was decided to send a pre-notification email, which included an introduction of the researcher, the background of this study and its objectives/goals, the name of the institution backing the study, the likely interview length, the importance of participation, roles and responsibility of participant and contact details for more information on any issue. It was also decided to send a reminder email and/or call council officials for a reminder.

### **E. Increasing respondent cooperation**

A number of strategies are available to the researcher to encourage respondent cooperation and participation in the interview programme. These include social reciprocity, tailoring the interview, establishing and maintaining interaction, and authority.

In order to obtain a better response rate, a promising strategy for interviewers is to build on the fundamental norm of social reciprocity during the introduction (Whatley, Webster, Smith, & Rhodes, 1999). In a recently published paper, Skageby (2010) highlighted that information can be a valuable commodity and exchange of that commodity can aid in social networking. For this study, we made the assumption that gaining an understanding of the potential barriers to e-government implementation, from a council's perspective and building up a knowledge-base from an exchange of such information would be perceived as a valuable resource by interviewees, encouraging reciprocity and respondent participation in the interview.

Tailoring refers to adjustments the interviewer makes to increase the probability of getting co-operation from an interviewee. Although Dijkstra and Smit (2002) found no appreciable effect of the tailoring approach on interviewee compliance, Groves et al. (1992) emphasised that interviewers who modified their prescribed 'script' – to be specific to an individual were found more successful in persuading reluctant respondents than those who followed the script strictly. The place where this approach has the most effect is in the introductory phase of the interview.

Establishing an informal positive interviewer-respondent interaction encourages longer interactions that enable the interviewer to pick up on more cues that can be used for tailoring, and it becomes difficult for respondent to object after a long interaction (Groves, et al., 1992; Hox, de Leeuw, & Snijkers, 1998). Morton-William (1993) emphasized the importance of the interviewer using social skills to build a more personal scenario to encourage respondent co-operation. Dijkstra and Smit (2002) suggest that in their study prolonged interaction provided the interviewee the opportunity to seek information from the interviewer on which to base their decision to participate or not.

Groves et al. (1992) expressed an opinion that people are more likely to comply with the request of someone whom they perceive as a legitimate authority. In a survey or interview context this higher authority could be perceived as the organisation sponsoring the study. The effect could be opposite if the sponsor is not perceived having such status like commercial organisation. The authors suggested that interviewers who stress the identity of the study's sponsor will be more successful in generating compliance with requests if the sponsor is generally seen as having a legitimate authority to collect the information (e.g., university or scientific research). Dijkstra and Smit's (2002) concluded that the 'authority

principle' does have positive impact on survey or interview participation. However, this study mentioned the sponsor's name in the 'request for participation' emails.

This study adapted some of the guidelines suggested for increasing response rate in telephone interview as suggested by Hox et al. (1998) and these are outlined as follows: 1) provision of a quiet work environment where both interviewer and interviewee can hear each other, 2) question topics are practical and supported by adequate background information, 3) interviewer is confident and keen about the study, 4) interviewer can provide assurances that personal and organisational identity will remain confidential, and 5) interviewer can confidently eliminate concerns about commercial interests.

#### **4.6.2 Designing the interview instrument**

Dillon, McKnight and Richardson (1993) suggested three general guidelines for devising an effective interview questionnaire: every question should support the research objectives and goals; interviewer refers to research objectives and goals constantly; and interviewer must consider how a question would help in answering the research propositions. Dillon, McKnight and Richardson also made specific suggestions on writing questions, including: questions should be clear and concise, must be written in a familiar language without technical jargon, must exclude words or phrases that may imply a certain bias and each question should pertain to only one issue. Manfreda et al. (2002) similarly cautioned against failure to clearly state the study's objectives and goals, writing questions that contain more than one thematic reference, and the use of expressions and phrases that are unknown to the interviewee. While certain questions used in the interviews in this study were adopted from prior research, attention was given to content validity, readability and the formatting of the questions in order to minimise the chance of misleading and inaccurate recording of responses. Furthermore, emphasis was given to the original questions and elements that were common to most studies.

#### **4.6.3 Developing a measure for the study**

This section discusses the procedure followed in constructing the questions used in the interview instrument. Wherever possible, constructs were adapted from prior research in order to ensure content validity (Luarn & Lin, 2004). The following steps were followed for question development.

#### 4.6.3.1 Specifying the domain of the construct

In the first step, the researcher defined the domain of the construct. This was based on literature reviews and identified barriers that local councils had faced or were facing in e-government implementation. Some definitions were adapted directly, while others were changed in order to fit the context of the investigation.

#### 4.6.3.2 Operational definitions of variables

The Table 4.6 shows the relevant variables that have been incorporated into the proposed e-government model for this study. It also provides brief explanations of the variables as well as how they were used in this study.

Variable name	Original definition	Definition used for this study
Strategy	A strategy is a plan of action designed to achieve a specific goal.	The strategy is the fundamental plan for navigating, re-engineering processes and procedures and implementing e-government initiatives.
Collaboration	Collaboration is defined as the interdependence among participating agencies that choose to combine their efforts to achieve better outcomes (Thomson & Perry, 2006).	Collaboration can be defined in an e-government context as the cooperation among different government agencies in implementing information and services on-line
Management support	Top management commitment and support shapes individuals' beliefs that the technology is useful for work activities and that the use of technology for work will be normatively valued and instrumentally rewarded (Purvis, Sambamurthy, & Zmud, 2001).	Top management support in e-government context can be defined as a term of managerial beliefs and support in initiatives and participation in adoption and implementation of e-government. Through long term strategic vision, top management can encourage the entire organisation to learn and participate in e-government assimilation.
Organisational culture	Organisational culture is defined as the level of loyalty and mutual trust that gives the organisation identity and shapes the behaviour of its members and holds an organisation together (Cheung et al., 2010).	Organisation culture in e-government context can be defined as a predisposing factor for achieving successful e-government reform initiatives.
Financial resources	The availability of money in the form of cash, securities, creditors, loan facilities, etc possessed by an organisation.	Financial resources can be defined a dominant factor that decides the pace in which government moves from initial to more advanced stages of e-government.
Human resources	Is the number of employees an organisation have	For this study context, human resources are defined as the number of skilled persons available for e-government implementation.
Organisation size	Organisation size is the number of its customers	The organisation size is defines as the number of ratepayers / residents have within the organisational boundary.
External pressure	External pressure in ICT is presumed to be caused by the perception that adopters will have certain competitive advantages by using newly adopted innovations.	External pressure can be defined as the influence on e-government adoption from neighbouring councils, states, neighbouring countries, citizens, business leaders, politicians, courts and other agencies
Legal issue	Restrictive laws and regulations developed affect an adoption or initiatives	Laws and regulations barriers for providing on-line government information and services
Digital divide	A digital divide is an inequality between groups, broadly construed, in terms of access to, use of, or knowledge of information and communication technologies (ICT)	The digital divide refers to the gap between people with effective access to on-line government information and services and those with very limited access
Security and Privacy	Refers to the ability to secure their computers from vulnerabilities and maintain the integrity of the stored information and protecting personal identity	Refers to the ability of government to secure their computers from vulnerabilities and maintain the integrity of the stored information and protecting personal identity

Infrastructure	The ICT infrastructure is the integrated framework upon which digital networks operate. It includes data centres, computers, computer networks and the Internet	The ICT infrastructure can be defined as a capability needed for providing on-line government information and services to citizens and businesses
Data and information (quality and availability)	Information quality is measured in terms of accuracy, timeliness, completeness, relevance, and consistency of information (DeLone & McLean, 2003).	Refers to the availability of information, its accuracy, relevancy and completeness.
Interoperability	Inter-operability is the ability to exchange information over a heterogeneous network in a meaningful and useful manner (Santos, 2008)	In e-government space, interoperability can be defined as an ability of information systems and of the business processes they support to share and exchange information

Table 4.6: Variables and operational definitions of the study’s research model

#### 4.6.3.3 Items scale for variables

Table 4.7 presents the initial questions designed to collect data on the variables in the research model. *Strategy* was measured using eight questions adapted from studies on parameters for e-government (Shahkooch & Abdollahi, 2007) and organisational transformation (Feng, 2003).

Variable	Questions	Adapted from
Strategy	<ol style="list-style-type: none"> <li>1. How would you characterise the level of e-government currently provided by your organisation?</li> <li>2. Does your organisation have a formal e-government strategy?                             <ol style="list-style-type: none"> <li>a. Does that strategy align with the New Zealand government’s e- government strategy?</li> <li>b. To what extent and how are citizens’ needs and perspectives taken into account in this strategy?</li> <li>c. Does the strategy incorporate e-democracy (on-line participation) as well as on-line services?</li> <li>d. Who or what unit within your organisation is responsible for e-government implementation and strategy?</li> </ol> </li> <li>3. What are your organisation’s main goals and objectives in relation to e-government?                             <ol style="list-style-type: none"> <li>a. Do these goals align with or conflict with other organisational goals?</li> </ol> </li> </ol>	Shahkooch and Abdollahi (2007), Feng (2003)
Collaboration	<ol style="list-style-type: none"> <li>4. How important is collaboration with other government agencies in your organisation’s e-government implementation?                             <ol style="list-style-type: none"> <li>a. What factors influence the effectiveness of this collaboration?</li> </ol> </li> <li>5. How important is collaboration between functional units within your organisation in your organisation’s e-government implementation is?                             <ol style="list-style-type: none"> <li>a. What factors influence the effectiveness of this collaboration?</li> </ol> </li> </ol>	Akbulut (2003), Reddick (2009), Gil-Garcia et al.(2007), Cheung et al. (2010)
Management support	<ol style="list-style-type: none"> <li>6. To what extent is there top management support for e-government in your organisation?                             <ol style="list-style-type: none"> <li>a. To what extent does your top management communicate the importance and benefits of e-government?</li> <li>b. To what extent does a good leadership influence e-government implementation in your organisation?</li> </ol> </li> <li>7. To what extent is there political support (Mayor and Councillors) for e-government in your organisation?                             <ol style="list-style-type: none"> <li>a. What effect does political support (or its lack) have for e-government implementation in your organisation?</li> </ol> </li> </ol>	Kamal and Themistocleous (2006), Teo et al. (2009), Al-Qirim (2007), Altameem et al.(2006), Titah and Barki (2008), Moon and Norris (2005), Burn and Robins (2003)
Organisation culture	<ol style="list-style-type: none"> <li>8. In what ways does your organisation’s culture (e.g. attitudes to and experiences of innovation and change) hinder or help support for implementation of e-government?                             <ol style="list-style-type: none"> <li>a. To what extent have resistance to change, internal conflicts or political issues influenced e-government implementation in your organisation?</li> </ol> </li> </ol>	Cheung et al. (2010), Reddick and Frank (2006), Coursey et al. (2005), Altameem et al. (2006), Moon and Norris (2005)

Financial resources	9. What role has the availability of financial resources played in implementing e-government in your organisation?	Akbulut (2003), Schwester (2009), Moon and Norris (2005), Bjørn and Fathul (2008)
Human resources	10. What influence has the availability of technical expertise had on implementing e-government in your organisation? a. Is that technical expertise available within the organisation or is it sourced externally? 11. What influence has the availability of adequately skilled staff to operate e-government services had on e-government implementation in your organisation? a. Does your organisation provide specific training for your e-government staff?	Viana (2005), Ebrahim and Irani (2005), Srivastava and Teo (2007), Reddick (2009)
Organisation size	12. To what extent has your organisation's size influenced its adoption and implementation of e-government?	Zornaza et al.(2004), Basoglu et al.(2007), Reddick and Frank (2006), Teo and Pian (2004)
External pressure	13. To what extent has pressure from external stakeholders (e.g. central government, other local authorities, citizens and business) influenced e-government implementation in your organisation? 14. To what extent has a perceived need for comparative advantage or desire for leadership in e-government influenced e-government implementation in your organisation?	Tung and Rieck (2005), Chwelos et al.(2001)
Legal issue	15. Is there an adequate legal and regulatory framework in place to facilitate e-government implementation? 16. Are there specific legal or regulatory issues that hinder e-government implementation?	Schware and Deane (2003), Scott (2006), Paskaleva-Shapira (2006)
Digital divide	17. To what extent are citizens in your organisation's catchment able to participate in e-government? a. Are Internet access, broadband access, income, education, age, or language, issues in citizen e-government participation?	Schware and Deane (2003), Choudrie and Dwivedi (2005), Mossberger et al.(2003)
Security and privacy	18. To what extent is information security an issue in e-government implementation in your organisation? 19. Does your organisation have a privacy policy that covers electronic information about citizens?	Reddick (2009), Ebrahim and Irani (2005), Beldad et al. (2009)
Infrastructure	20. Are your organisation's network infrastructure, speed and reliability sufficient to support current and future e-government needs? 21. Is the availability of broadband within your organisation's area an issue in e-government implementation?	Dwivedi and Lal (2007), Layne and Lee (2001)
Data and information	22. Is e-government implementation in your organisation affected by issues related to data or information availability, appropriateness or quality?	Schware and Deane (2003), Layne and Lee (2001)
Interoperability	23. Is the compatibility of technological and organisational systems (both within your organisation and with other agencies) an issue in e-government implementation? 24. Are adequate standards for interoperability in e-government available?	Akbulut (2003)

Table 4.7: List of questions by variable

The three main constructs, i.e. questions 1 to 3, were designed to assess: 1) current e-government development, 2) future plans and, 3) objectives and goals of e-government. Five sub-questions were designed to elicit more detailed information on the second and third constructs. *Collaboration*, both external and internal, was measured using questions adapted from studies on the effectiveness of e- government (Reddick & Frank, 2007), the culture surrounding it (Cheung et al., 2010), and information sharing between government departments (Akbulut, 2003; Gil-Garcia et al., 2007).

With respect to *management support*, four questions were used to assess both top management support and political support. Top management support included two sub-questions designed to assess communication between high-level managers and their staff and the influence of leadership on e-government development and implementation. The questions were adapted from studies on the adoption of e-government (Kamal & Themistocleous, 2006), the adoption of e-procurement (Teo et al., 2009), the adoption of e-commerce (Al-Qirim, 2007), strong leadership for e-government acceptance (Altameem et al., 2006; Titah & Barki, 2008), and top official's commitment (Burn & Robins, 2003). *Organisational culture* was assessed using two questions adapted from studies on employee's roles and attitudes to adoption of technology (Altameem et al., 2006; Cheung et al., 2010), resistance to change for e-government (Moon & Norris, 2005; Reddick & Frank, 2006), and organisational change (Altameem et al., 2006; Coursey et al., 2005).

A single question was used to assess the effects of *financial resources* on e-government implementation. This question was adapted from research on adoption of low cost technology in public organisation (Moon & Norris, 2005), e-government adoption (Akbulut, 2003; Schwester, 2009) and financial impacts on technology projects in developing countries (Bjørn & Fathul, 2008). With regard to the impact of *human resources*, the four questions used for this study were adapted from studies on business values for e-government (Viana et al., 2005), e-government adoption (Ebrahim & Irani, 2005; Srivastava & Teo, 2007) and effectiveness of e-government (Reddick, 2009). A single question was used to assess the impact of *organisation size* on e-government. This question was adapted from studies on innovation and *organisation size* (Zornaza et al., 2004), IT innovation and adoption (Basoglu, Daim, & Kerimoglu, 2007), web adoption (Teo & Pian, 2004) and e-government adoption (Reddick & Frank, 2006).

The two questions relating to *external pressure* were adapted from Tung and Rieck's (2005) study on e-government in business organisation and a study on electronic data interchange (EDI) adoption (Chwelos et al., 2001). The *legal issues* of e-government implementation were measured using questions adapted from studies on the role of a legal framework for e-government implementation by Paskaleva- Shapira (2006) and Schware, and Deane (2003) and a study on public engagement in e-government by Scott (2006). Questions on how the *digital divide* impacted on e-government was adapted from several relevant studies (Choudrie & Dwivedi, 2005; Mossberger et al., 2003; Schware & Deane, 2003).

Studies on the effectiveness of e-government (Reddick, 2009), e-government adoption (Ebrahim & Irani, 2005) and the importance of privacy statements on websites (Beldad, et al., 2009) contributed to the two questions on *security and privacy* in e-government implementation. The two questions on the *infrastructure* needed for e-government were adapted from Layne and Lee's study (2001) on e-government maturity and the study of broadband adoption by Dwivedi and Lal (2007). The impact of *data and information* on e-government was assessed using a single question adapted from two prior e-government studies (Layne & Lee, 2001; Schware & Deane, 2003). The influence of *inter-operability* for e-government was assessed using two questions adapted from Akbulut's (2003) study on information sharing between state and local government.

#### **4.6.4 Ordering questions in the interview instrument**

McFarland (1981) found that when conducting a telephone survey the effect the order of questions had on overall results was not ubiquitous. While McFarland found that the question order had no impact when the content of a question was more specific, requiring, in turn, a specific answer, general questions had the greater potential to be affected by the order in which they were asked. For the interviews conducted in this study, it was decided to place the general question at the beginning of the interview questionnaire, followed by the specific questions. All questions measuring a variable were placed adjacent to each other.

#### **4.6.5 Pre-testing**

The interview instrument was assessed by two people, a Professor from AUT University and a senior manager from a local council information services department. In the pre-testing process, assessors were asked to give their opinion regarding the following:

- If any questions were unclear or ambiguous.
- If there were any unnecessary or repeat questions.
- If any questions were difficult for the respondent to understand or answer.
- Any other comments.

Following suggestions received from the assessors, four sub-questions (4a, 5a, 7a and 17a in Table 4.7) were dropped as they were considered to be unnecessary and likely to be answered in the preceding higher-level question. As noted, the final interview instrument is shown in Appendix E.

#### **4.6.6 Pilot testing**

In order to detect weaknesses in the design of the interview instrument and to run through the whole procedure including making calls to interviewees, recording that conversation,

transcribing the recorded data, coding and analysing them, it was considered prudent to conduct a pilot test before progressing with the final study. Two people from the researcher's office were selected for the pilot test and information about the study and consent forms were emailed to them. Each interviewee was requested to comment on, 1) the introductory call, 2) the questions asked, 3) the flow of the interview, and 4) any other issues they felt may be relevant. There were no comments made in relation to any of the questions and both interviewees found the questions were short, simple and easy to understand and answer. Recordings of the interviews were transcribed, coded and analysed into a Microsoft Excel workbook.

#### **4.6.7 Ethical approval**

Since this study intended to collect data from individuals, prior approval was required from the AUT University Ethics Committee (AUTECH). An application, the interview instrument (Appendix E), a participant information sheet (Appendix F) and a consent form (Appendix G) were forwarded to AUTECH and for ethical approval for the interview programme was received on 13 February 2011, AUTECH reference number 10/245.

#### **4.6.8 Telephone interviews**

The sampling unit for the telephone interviews includes key officials of all New Zealand local councils, who were directly or indirectly involved in e-government implementations. The exception was Christchurch City Council, which was not considered as several earthquakes had caused huge damage to the city and disruption to human lives. It was expected that this council would be busy restoring some semblance of normality for their population rather than e-government implementation. Thus, the sample frame covered 67 local councils. Systematic random sampling was used to obtain an intended sample size of 35-40 council officials, with one interview per council.

The Chief Executive Officer, Chief Information Officer, Corporate Services Manager or the Finance Manager of each local council was invited by email or by telephone to participate in a telephone interview. The interviews were conducted between 24 March and 24 August 2011. The interviews were subject to the participants' busy work schedules, time constraints, unexpected business developments, and availability. While the initial plan was to conduct all the interviews by June 2011, this turned out to be impracticable, as appointments had to be negotiated with some tolerance over times and dates and in some cases postponed. One interview had to be conducted twice as interviewee had to leave during the interview due to urgent work. Pre-notification was sent regarding the research

project (a participant information and consent form). Arrangements were made for these forms to be signed and returned by the intended interviewees to ensure clarity and agreement. A reminder email or telephone call was made closer to the appointed time to remind the intended interviewee of the arrangements. The interview participants were assured of confidentiality. The intention was that the participants themselves and their organisation would not be identified. There was also an assurance that no sensitive questions would be asked during the interview, even though each interviewee had an option to bypass a question if he or she wished to. The interview times ranged from 25 minutes to 1 hour. There were no problems experienced during the interviews. One of the interviews was conducted face-to-face instead of telephone due to geographic proximity. The process / procedure followed for each interview is as follow:

1. An email was sent to the interviewee one day prior to the interview date as a reminder about the date and time of the interview. Also sent were 1) the information sheet (appendix F), and 2) the consent form (appendix G), requesting them to sign and return the form electronically.
2. Interviewees were called on the scheduled date and time. After the initial greeting, permission was sought for recording the interview from each interviewer.
3. Questions were asked using the questionnaire given in Appendix E as the general basis. However, if an interviewee had answered a later question along with a previous question then the later question was not asked. For example, if an interviewee talked about limited availability of broadband in their council or mentioned about council size then the respective question was not asked at a later stage. Further, if it was noticed that an interviewee had not understood a question and had given an answer different to what was intended then the meaning of that question was explained. Further, explanation was given when an interviewee sought clarification of the meaning of a question. In summary, the interviews were not fully structured, even though the questionnaire that guided them was structured.
4. All interviews were recorded using a digital recorder and transferred to a computer for further use and future reference.

Of the 67 councils, 44 council officials were interviewed. Given the predicted decreasing response rates in surveys (J. R. Evans & Mathur, 2005), more particularly for telephone surveys (Keeter, Kennedy, Dimock, Best, & Craighill, 2006; Kohut, Keeter, Doherty, Dimock, & Christian, 2012), this represents a very high response rate of 66%. The higher response rate was attributed to pre-notification, personalised emails, telephone calls followed by reminder emails and/or phone calls, and contacting multiple council officials if

necessary. Of the 44 interviews, a satisfactory recording for one interview was not achieved as there were problems with the line so the data, leaving 43 usable interviews.

#### **4.6.8.1 Survey error**

Dillman (2000) suggests that researchers conducting surveys should take necessary steps to minimize four potential sources of error: sampling errors, measurement errors, non-response errors, and non-coverage errors. The sampling error was addressed in this study by covering all councils within the sample frame, contacting multiple officials for participation, preparing a simple, short and easy to understand questionnaire and using high quality instruments for recording interviews. The non-coverage error was not present for this study as all councils had telephones and could participate in an interview.

Measurement error is defined as the difference between the answer given by the respondent and the true value that applies to that answer. Measurement errors result when the interviewee is unable to follow through on questions or does not offer opinions to specific questions, or supplies inadequate answers that cannot be compiled in any meaningful way in comparison with data collected from other councils (Dillman, 2000). There are several causes of measurement error that have been discussed in the literature on telephone surveys, including a lack of visual stimulus for the respondent, timing of the questions and the length of the expected response, poor quality phone lines, and the increased likelihood of a respondent not being focused (Groves, et al., 2009; Lynn & Kaminska, 2011). In light of this research, every effort was made to reduce the magnitude of measurement error by focusing on short, simple questions, that are easy to understand, restricting the use of multiple questions and ensuring the telephone line was clear. Further, this study employed a flexible interviewing technique to assist interviewees with the meaning of words or sentences or where they found difficulty in answering a question. Flexible interviewing techniques have been found to improve data quality by allowing the conversational flexibility that respondents need in order to understand the meaning of the question and convey their response (Schober & Conrad, 1997; Suchman & Jordon, 1990). In cases where responses were brief, the interviewer used cues or prompts to encourage interviewee to expound his opinions on the question further.

A non-response bias may occur as the result of 'item non-response', where one or more questions are not answered while valid responses are provided to the other questions. However, in this study all questions were asked to all participants. Thus, everyone responded in full, and an item non-response bias was avoided. Another form of non-

response bias is 'unit non-response', where there is complete non-participation on the part of potential respondents who the researcher had already canvassed and organised. This is the type of non-response bias that was possible within this research, but the high response rate and the total number of councils agreeing to participate in the study suggest that the data collected was adequate and that a follow-up with any no-shows was not warranted. Further, there is no particular reason to suspect that any particular subset of the target population was absent from the received responses.

In addition, the following general measures were taken to reduce any survey errors in the interview programme:

- The interview instrument was kept short, simple and easy to understand.
- The survey's sponsor (AUT University) was made known.
- Confidentiality and anonymity were assured.
- The positive objectives and intended outcomes of the study were made clear.
- An offer was made to each council to provide a summary of results, if requested.

#### **4.6.9 Interview data transcription**

Three graduate students experienced in transcription work were selected for transcribing the recorded interviews into Microsoft Word. A meeting was arranged with the transcribers to explain the work to be done and that data confidentiality was to be maintained. A confidentiality agreement was signed by each transcriber. A copy of this agreement is attached in Appendix H. The researcher checked all transcribed documents and corrections were made wherever required. This was mainly where the interviewee used situation specific, i.e. council terminology. For example, the acronym 'LIM' (Land Information Memorandum) was not transcribed correctly.

#### **4.6.10 Analysis of interview data**

In this study, content analysis was used by the researcher to analyse the interview data and identify concepts and initiatives taken by local governments as well as the barriers they had faced or were facing in implementing on-line information and services. Content analysis is a research technique for the objective, systematic and quantitative description of the content of a text (Zikmund, 2003). Numerous applications of content analysis have been discussed and varying types of evidence have been derived through both quantitative and qualitative content analysis (Goldenberg, 1992). Quantitative content analysis emphasises counting and frequency analyses of specific data elements, while qualitative content analysis is

concerned with the identification of themes and patterns in the data Bryman (2008). The specific type of content analysis used by an individual depends on his or her interests and also the problem under investigation (Weber, 1990). Hsieh and Shannon (2005), and Patton (2002) discuss inductive and deductive approaches to qualitative content analysis. The inductive process uses inductive reasoning, by which categories and themes are derived directly from the raw data through the researcher's careful examination and constant comparison. In the deductive process, coding starts with initial categories from a theory or relevant research findings, the purpose of the analysis being to validate or extend a conceptual framework. This study used both inductive and deductive approaches to analyse the data since the interviews included both open-ended questions and specific questions on factors that were perceived as barriers to e-government initiatives.

The steps followed for the qualitative content analysis were stated below and Table 4.8 shows a sample how interview data was coded for further analysis:

1. In Microsoft Excel, a new datasheet was created for every question in the final interview instrument.
2. For each question, the transcribed data extracted from all 43 council interviews were entered by row into the appropriate datasheet. An example is shown in Appendix I (for question 2)
3. The researcher read through the transcribed answers to re-check the spelling and grammatical mistakes. Any changes made to data in Excel datasheets were correspondingly made for the transcribed data in Microsoft Word.
4. After a second reading of the transcribed answers to a particular question, the interviewer's interpretation of an emergent category or how a factor influenced e-government implementation was coded in a column for *initial coding* (shown in Table 4.8). At the same time, the researcher highlighted the relevant text (sentence or sentences) in the extracted interview data that supported the reasoning behind that code assignment.
5. If a part of an answer to a question was found to be relevant to another question, that part was copied from the original data extract and added to the appropriate datasheet for the other question with a reference to its original location.
6. Steps 4 and 5 were followed for all 43 council interviews
7. The researcher reviewed the assigned initial codes and the highlighted text(s) for consistency, then grouped them into more refined codes in a column for *second coding* and made changes, if required (shown in Table 4.8).

8. These secondary codes were summarised into number frequencies and percentages of the total number of responses for each question.
9. When presenting the results of the qualitative content analysis, summary results for each major category are presented with sufficient description to allow the reader to understand the basis for an interpretation, and with quotes from the transcribed data to justify the interpretations made Patton (2002).

Council ID	Interview data (question 3)	Initial code	Second code	Additional code
2	No, there's not, and thinking about that it's probably something that we should embark on. We are doing things to some extent piece-meal ...	No formal strategy	No formal strategy	Develop in future
4	No we don't, we are small council. We actually don't have anything formal in that sort of way ... We tend to be a little bit more flexible and that we can work on ideas without having a formal structure in place being such a small organisation of course.	No formal strategy	No formal strategy	Small council
14	Yes, we do. We already had one but it has not been updated or changed somewhat in the last six months, with more focus on actually what we are implementing, rather than just saying we are doing e-commerce	E-government strategy	E-government strategy	Needs updating
25	We have an information strategy which has the online service components in it. So yes, I guess you can say that.	Information strategy	E-government strategy	
26	We have a digital strategy that essentially picks up e-government aspirations, yes.	Digital strategy	E-government strategy	

Table 4.8: Interview data coding

There are several possible strategies and criteria that can be used to enhance the *trustworthiness* of qualitative research findings. According to Lincoln and Guba (1985), trustworthiness of a post-positivist study can be assessed in terms of its credibility, transferability, dependability and conformability. These authors also describe a variety of strategies that researcher can use to operationalise these concepts. This study addressed these concepts in the following ways.

Gaining feedback on the data and its interpretation from different sources (e.g. supervisor, colleagues) was used to increase the credibility of the research. Transferability was achieved by providing a detailed description of the research methods, context and assumptions underlying the study, thus enabling readers to appraise the significance of the meanings attached to the findings. Dependability was achieved through documentation of the details of data, methods and decisions made during the thesis. The potential for auditing the research was used to establish conformability of this study. In order to make auditing possible by others researchers, all collected data are organised and kept in an easily retrievable form so that they can be made available to anyone, if needed.

#### **4.7 Summary**

This chapter has described and discussed the research methods and instruments used in order to investigate the research objectives of this study. Measurements for theoretical constructs have been adapted from the relevant literature. In chapter 5, 6 and 7, the results of the data analysis are described. Qualitative content analysis was selected for analysing the data collected through three different methods as it was found to be useful in extracting the relevant information and issues. Nonetheless, each method of data analysis has its limitations or problems caused through their application. One possible point of critique is the generalisation of data due to the process of data reduction, where large amounts of text are classified into a relatively small number of categories.

## **CHAPTER 5      LOCAL COUNCIL WEBSITE ANALYSIS**

### **5.0      *Introduction***

Information collected through the evaluation of local government websites in New Zealand was intended to address following research question:

1. What is the level of e-government maturity at the local government level in New Zealand?

In this chapter, a comparison of the total scores is presented first, followed by the scores of the different stages in the proposed maturity model, the frequencies of the most and least common features, and finally a summary of the findings is presented at the end.

### **5.1      *Total score comparisons***

The website analysis scores of the 67 local councils (as of 30/06/2012) are shown in Table 5.1. All 67 councils had accessible websites at the time of then analysis. The total scores were obtained by adding together the scores for each item. Thus, the maximum possible total score for each website was 80. Table 5.1 also shows the website analysis scores for each stage. No council scored under the integration stage, meaning that in New Zealand, local council online services are standalone and not integrated with online services from other internal departments or other government agencies. Figure 5.1 displays the total scores graphically, and shows that the total scores range from 24.5 (31%) to 60.5 (76%) out of the maximum possible score of 80 for each website. Of the 67 local governments, 5 scored between 70-79% of the maximum possible score, 45 scored between 50-69% and rest were below 50%. Auckland Council is at the top of the list with a score of 60.5, while Chatham Islands Council is the bottom with 24.5. Out of Auckland Council and the 12 city councils (population generally > 50,000), 11 are in the top 14 positions in terms of total score. The Palmerston North and Upper Hutt City Councils are ranked 25th and 56th respectively. The Queenstown Lakes, New Plymouth and Whakatane District Councils are ranked 7th, 9th and 11th, respectively. In the 2012 local government website survey carried out by the Association of Local Government Information Management (ALGIM, 2012), the New Plymouth website was ranked top for 'best new features' in the 'population > 50000' category, while Thames-Coromandel District Council was top in the 'population < 50000' category. Surprisingly, Thames-Coromandel District Council ranked 49th in this study. This is likely to be due to the different assessment criteria and data collection techniques used in these two studies.

Council ID	Council	Population	Total score (max=80)	Information stage (max=40)	Interaction stage (max=23)	Transaction stage (max=12)	Integration stage (max=5)
1	Auckland Council	1486000	60.5	38.5	14.0	8.0	0.0
50	Dunedin City Council	125990	58.0	38.0	15.0	5.0	0.0
40	Wellington City Council	200200	57.0	39.0	13.5	4.5	0.0
58	Nelson City Council	46200	56.5	39.0	10.5	7.0	0.0
48	Christchurch City Council	367770	56.0	38.5	15.5	2.0	0.0
6	Hamilton City Council	145700	52.5	37.0	12.0	3.5	0.0
18	New Plymouth District Council	73800	52.5	39.0	9.0	4.5	0.0
22	Porirua City Council	52650	52.5	39.0	10.5	3.0	0.0
59	Queenstown Lakes District Council	28700	52.5	39.0	11.5	2.0	0.0
17	Napier City Council	57820	52.0	36.0	13.0	3.0	0.0
42	Whakatane District Council	34500	51.0	38.0	12.0	1.0	0.0
54	Invercargill City Council	53000	51.0	39.0	11.0	1.0	0.0
10	Hutt City Council	102950	50.5	37.0	10.5	3.0	0.0
32	Tauranga City Council	115700	50.5	37.0	8.5	5.0	0.0
61	Southland District Council	27930	50.5	38.0	10.5	2.0	0.0
64	Waimakariri District Council	48600	50.5	39.0	9.5	2.0	0.0
62	Tasman District Council	48090	50.0	38.5	9.5	2.0	0.0
57	Marlborough District Council	45620	49.0	38.0	9.0	2.0	0.0
60	Selwyn District Council	41080	49.0	38.0	9.0	2.0	0.0
67	Westland District Council	16120	49.0	38.0	9.0	2.0	0.0
5	Gisborne District Council	46570	48.5	37.5	8.5	2.5	0.0
43	Whangarei District Council	80580	48.0	38.5	8.5	1.0	0.0
51	Gore District Council	12280	48.0	33.5	9.5	5.0	0.0
26	South Taranaki District Council	26940	47.5	37.5	9.0	1.0	0.0
21	Palmerston North City Council	82150	47.0	37.0	8.0	2.0	0.0
31	Taupo District Council	34030	47.0	32.5	8.5	6.0	0.0
65	Waimate District Council	7640	46.5	36.0	9.5	1.0	0.0
7	Hastings District Council	75510	46.0	35.0	8.0	3.0	0.0
3	Central Hawke's Bay District Council	13480	45.5	34.5	8.0	3.0	0.0
2	Carterton District Council	7650	45.0	32.5	10.0	2.5	0.0
53	Hurunui District Council	11330	44.5	33.0	8.5	3.0	0.0
63	Timaru District Council	44640	44.5	36.0	6.5	2.0	0.0
4	Far North District Council	58550	44.0	37.0	6.0	1.0	0.0
35	Waikato District Council	64250	44.0	35.0	7.0	2.0	0.0
39	Wanganui District Council	43500	44.0	35.5	7.5	1.0	0.0
9	Horowhenua District Council	25220	43.5	34.5	8.0	1.0	0.0
12	Kapiti Coast District Council	49790	43.5	33.0	8.5	2.0	0.0
52	Grey District Council	13890	43.5	32.5	8.0	3.0	0.0
36	Waipa District Council	46090	43.0	34.0	8.0	1.0	0.0
44	Ashburton District Council	30100	43.0	35.5	6.5	1.0	0.0
24	Rotorua District Council	68900	42.5	35.0	6.5	1.0	0.0
37	Wairoa District Council	8350	42.0	36.0	5.0	1.0	0.0
41	Western BOP Dist Council	45810	42.0	37.0	4.0	1.0	0.0
45	Buller District Council	10090	42.0	34.0	6.0	2.0	0.0
66	Waitaki District Council	20890	41.5	35.0	5.5	1.0	0.0
15	Masterton District Council	23540	40.5	31.5	8.0	1.0	0.0
25	Ruapehu District Council	12240	40.5	35.0	4.5	1.0	0.0
49	Clutha District Council	17560	40.5	33.5	7.0	0.0	0.0
33	Thames-Coromandel District Council	27000	40.0	31.5	7.5	1.0	0.0
38	Waitomo District Council	9630	40.0	35.0	4.0	1.0	0.0
8	Hauraki District Council	18750	39.5	31.0	7.5	1.0	0.0
23	Rangitikei District Council	14790	39.0	30.5	8.5	0.0	0.0
14	Manawatu District Council	30020	38.5	31.5	6.0	1.0	0.0
16	Matamata-Piako District Council	31930	38.5	33.0	4.5	1.0	0.0
29	Stratford District Council	9160	38.0	31.0	7.0	0.0	0.0
34	Upper Hutt City Council	41500	38.0	31.5	6.5	0.0	0.0
28	South Wairarapa District Council	9430	37.0	30.5	6.5	0.0	0.0
55	Kaikoura District Council	3860	36.0	30.5	4.5	1.0	0.0
30	Tararua District Council	17720	35.0	26.5	5.5	3.0	0.0
27	South Waikato District Council	22860	34.5	28.0	5.5	1.0	0.0
20	Otorohanga District Council	9320	33.5	28.5	4.0	1.0	0.0
19	Opotiki District Council	8950	32.5	28.5	3.5	0.5	0.0
46	Central Otago District Council	18420	31.0	27.5	2.5	1.0	0.0
56	Mackenzie District Council	4050	31.0	27.5	3.5	0.0	0.0
13	Kawerau District Council	6940	30.0	27.0	2.0	1.0	0.0
11	Kaipara District Council	19170	28.5	22.5	2.0	4.0	0.0
47	Chatham Islands Council	640	24.5	23.5	1.0	0.0	0.0

Table 5.1: Local council website analysis scores

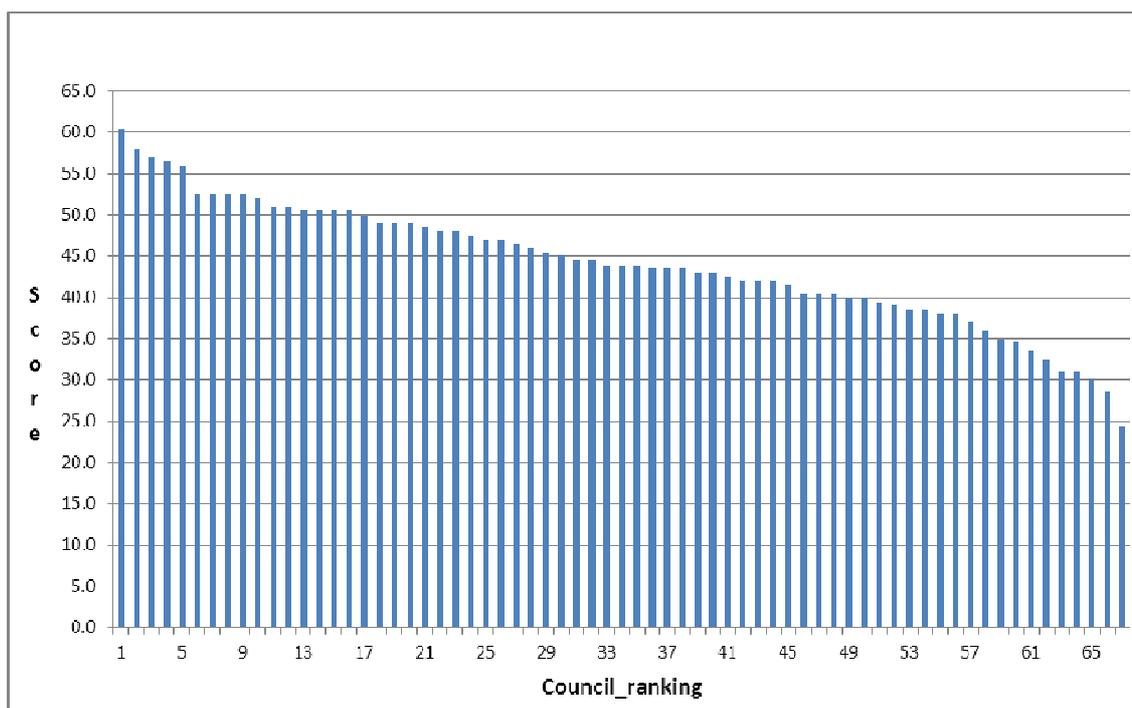


Figure 5.1: Local council website analysis total scores

Figure 5.2 shows the local council website analysis total scores against council population (using a logarithmic scale), which ranges from 640 (Chatham Islands Council) to 1.4 million (Auckland Council). These two councils provide the extreme points in the graph, with Auckland Council (the highest population) scoring highest in the website evaluation, and Chatham Islands Council (the lowest population) scoring the lowest. The trend line (with an R-squared of 0.55) shows that, at a very general level, the data suggest that as council population increases, so does the council website maturity. However, there are many exceptions to this. For example, Nelson ranked 22nd in population but came 4th in website maturity ranking. As noted above, two of the city councils with populations over 50,000 scored relatively poorly. While Flak et al. (2005) found in their Norwegian local government study that “it is not necessarily the case that the most populous municipalities, and presumably those with the largest IT expenditures or the greatest need to offer services and functions to large and diverse populations, have the most extensive e-government solutions” (p. 53), this study suggests that for New Zealand there is some tentative evidence for a relationship between the population of a local council and the maturity of its website.

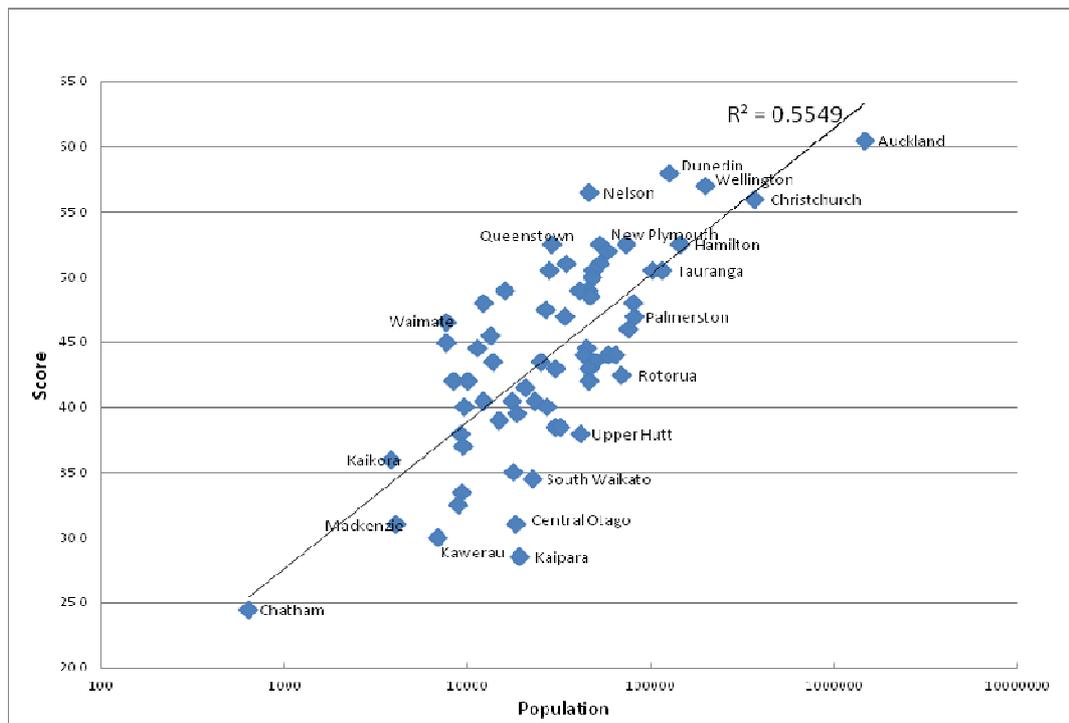


Figure 5.2: Local council website analysis total score vs. council population

## 5.2 Stage score comparisons

Local council website analysis scores in each of the three stages in which the New Zealand local councils scored are shown in Figure 5.3 through Figure 5.5. As expected, all websites' evaluation scores were relatively high in the information stage (Figure 5.3), in which a council seeks to provide information about services and activities through its website, rather than through face-to-face or phone conversations. While all websites assessed provide such information, Figure 5.3 shows that there is a great deal of variability in scores, which range from 22.5 (56%) to 39.0(98%). Of the 67 councils, 58 councils (87%) scored over 75% of the maximum possible score for the information stage. Seven councils shared the top position with the highest score of 39.0s (98% of the maximum possible score), while Auckland Council and three others had the second highest score of 38.5 (96% of the maximum possible score).

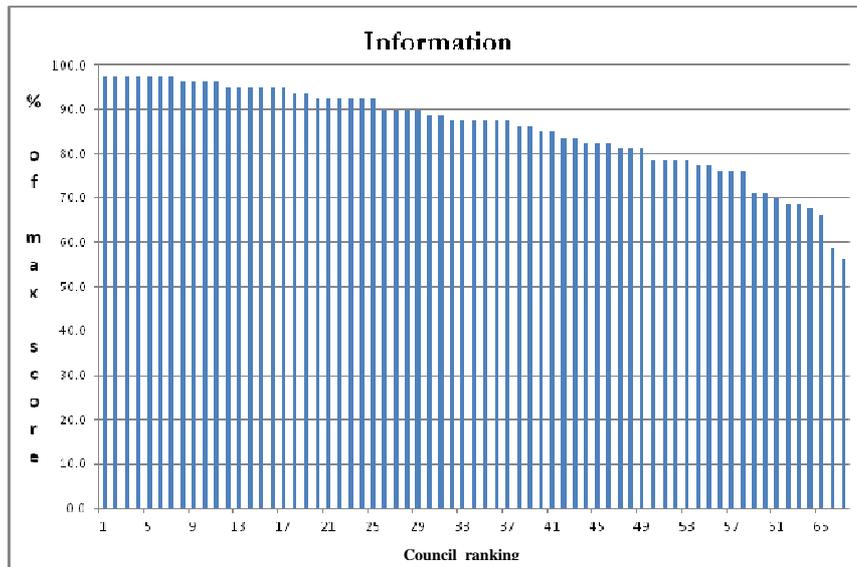


Figure 5.3: Local council website analysis scores for the information stage

Figure 5.4 shows the scores for the interaction stage in descending order. As the figure shows, only 8 out of 67 councils scored 50% or higher of the maximum possible score for this stage (23), meaning that the majority of New Zealand local councils provide relatively limited online facilities for their citizens to interact with them. The Christchurch City Council came at the top with score of 15.5 (67% of the maximum). Interestingly, Whakatane District Council ranked 6th in the interaction stage, somewhat higher than its 12th and 13th rankings for total score and the information stage. This suggests that Whakatane District Council e-government development initiatives are relatively more focused on implementing interactive services compared to many other councils. For example, New Plymouth had the highest score for the information stage (39.0), but was only ranked 18th in the interaction stage with a score of 9.0 (39% of the maximum).

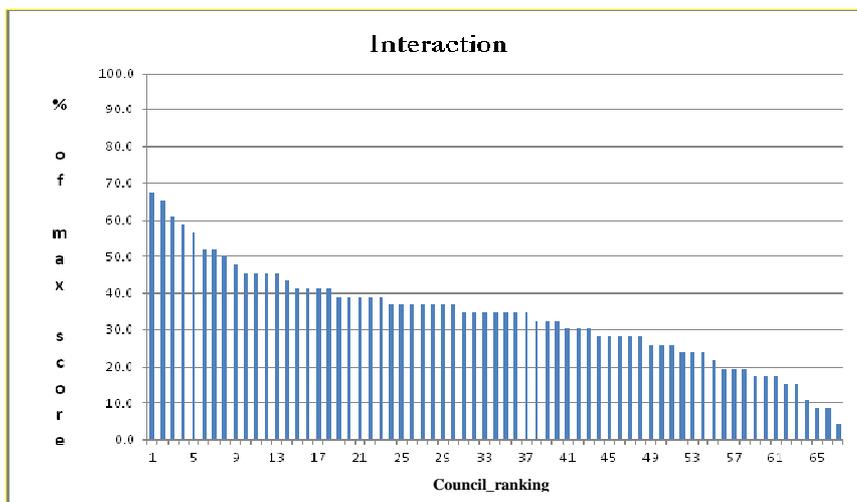


Figure 5.4: Local council website analysis scores for the interaction stage

Figure 5.5 reveals that 60 council websites had online transaction capabilities. This stage covers the transaction handling involved in making payments for services, paying fines, ordering and paying for reports, and handling transactions relating to other services through the council website. Auckland Council scored the highest, with 8 transaction-related items (67% of the maximum possible score). Only the top 3 councils provided at least 50% of the total 12 transactional services through their websites. Interestingly, these councils scored more as percentage of the maximum possible score in the transaction stage than in the interaction stage. One possible reason could be that these councils have implemented services relating to e-democracy. The e-government development trend shows that local councils are implementing transactional services in groups except top 10 councils. This could be because of shared services exist between those groups or could be those groups follow the progress of other groups and then decide whether or not to implement a particular service online. Overall, the total number of transactional services provided by local councils is relatively small, meaning that most New Zealand local councils are at an early stage of maturity in this e-government space.

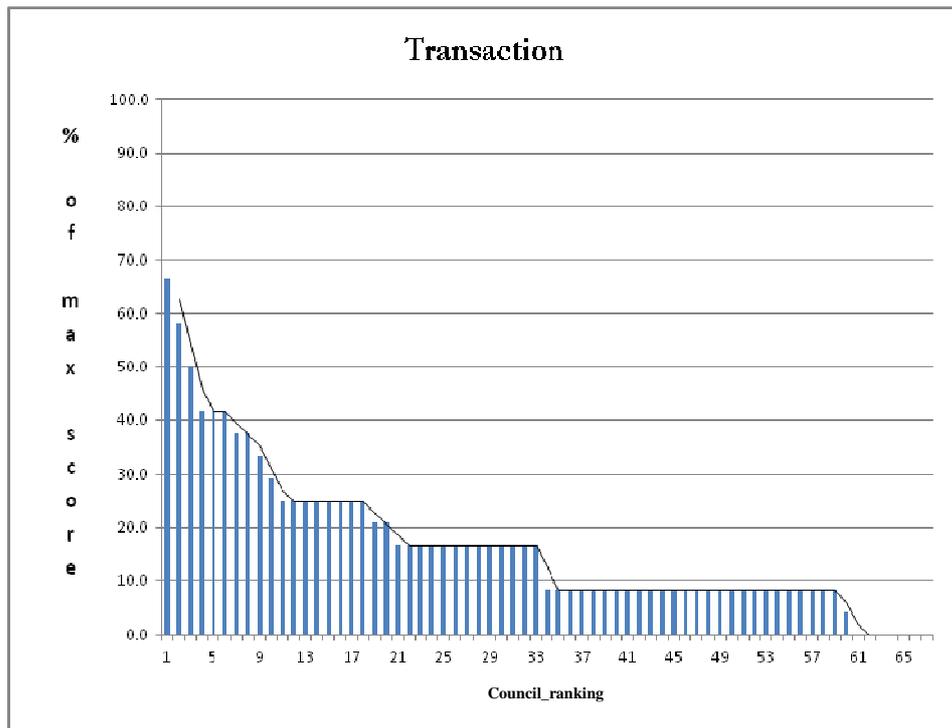


Figure 5.5: Local council website analysis score of transaction stage

No analysis was carried out on integration as no council scored for integration capability.

### 5.3 Feature frequencies

Table 5.2 and Table 5.3 list the most common and least common e-government features of *information stage*, together with the number of local councils supporting each feature, and the percentage of the total number of local councils this represents. The data in Table 5.2 shows that information on 31 services or activities (out of 40) were available on over 80% of local council websites and that the top 7 features were fully implemented by all councils. Although information on *council plans and budget* was implemented by all 67 councils, all but 5 of them had implemented these only partially. Table 5.3 lists the 9 least common features found on the council websites, although all but 1 were found in 50-80% of websites. The least common feature, only implemented by 3 councils, was *webcasting council meetings/ hearings*.

	Features	No of councils	% of total councils
1	Meeting, agendas and minutes	67	100.0
2	Forms download	67	100.0
3	Directions to Council offices	67	100.0
4	Strategy and policy	67	100.0
5	Civil defence and emergency	67	100.0
6	Mayor and Councilor's contacts	67	100.0
7	Local News and Events	67	100.0
8	Council plans & budgets	67	100.0
9	Reports (e.g. annual report)	66	98.5
10	Building and resource consenting	66	98.5
11	Licensing	66	98.5
12	Permit (e.g. building permit)	66	98.5
13	Council departments and contacts	66	98.5
14	Rates	65	97.0
15	Library services	65	97.0
16	Community services	65	97.0
17	Parks and recreation centre	65	97.0
18	Arts and culture	65	97.0
19	Solid waste and re-cycling	64	95.5
20	Funds and Grants	64	95.5
21	Job Vacancy	64	95.5
22	Housing	63	94.0
23	Demographic information	62	92.5
24	Zoning and Planning information	62	92.5
25	Management team and their contact	61	91.0
26	Privacy and security policy	60	89.6
27	Cemetery services	60	89.6
28	Environmental services(e.g. pollution)	59	88.1
29	Working hours	58	86.6
30	Road closure/detour	56	83.6
31	Tourism	56	83.6

Table 5.2: Most common features within information stage

	Features	No of councils	% of total councils
1	Public health and safety	53	79.1
2	Virtual City Tour	50	74.6
3	FAQs	49	73.1
4	Tenders and auctions	49	73.1
5	Community groups and their contacts	44	65.7
6	Automatic email update about Council's policy or	41	61.2
7	Transport	40	59.7
8	Business opportunities	36	53.7
9	Webcasting council meetings/hearings	3	4.5

Table 5.3: Least common features within information stage

Table 5.4 and Table 5.5 list the most common and least common e-government features of *interaction stage*, together with the number of local councils supporting each feature, and the percentage of the total number of local councils this represents. Table 5.4 lists the 10 features that were available in over 49% of the council websites. None of the features of the interaction stage were implemented in all councils. Table 5.5 lists 13 features found in less than 35% of council websites, of which the 8 least common features were available on less than 10% of council websites.

	Features	No of councils	% of total councils
1	Search engine	66	98.5
2	Library catalogue search	57	85.1
3	Links to other local, regional or central	55	82.1
4	Cemetery search	50	74.6
5	Online complaint / report issues	49	73.1
6	Apply for job	49	73.1
7	Interactive GIS	41	61.2
8	Request for service	38	56.7
9	Online chat / forum / discussion groups	35	52.2
10	Consultation and submission	33	49.3

Table 5.4: Most common features within interaction stage

	Features	No of councils	% of total councils
1	Request for property report	23	34.3
2	Online survey	19	28.4
3	Park and hall booking request	16	23.9
4	Apply for grants	12	17.9
5	Apply for building and resource consent	10	14.9
6	Apply for new / renew license	6	9.0
7	Apply for permit	5	7.5
8	Apply for rate rebate	5	7.5
9	Inspection booking request	4	6.0
10	Apply for certificate (e.g. building code of	4	6.0
11	Submit quotation/ submit tender documents	2	3.0
12	Multiple languages / translator	1	1.5
13	Rubbish collection booking request	0	0.0

Table 5.5: Least common features within interaction stage

Table 5.6 lists all 12 features of the *transaction stage*, together with the number of local councils supporting each feature, and the percentage of the total number of local councils

this represents. The figures show that apart from 2 features, i.e. *reserve or renew library book* and *payment of property rates*, the rest were implemented by only a small number of councils. The bottom 4 features were not available on any council website.

	Features	No of councils	% of total councils
1	Reserve or renew library book	46	68.7
2	Payment of property rates	33	49.3
3	Voter registration	22	32.8
4	Payment of fines	14	20.9
5	Payment of consent fees	7	10.4
6	Complete facility (park / hall) booking process	7	10.4
7	Payment of license fees	5	7.5
8	Order reports and make payments	4	6.0
9	Complete inspection booking and pay fees	0	0.0
10	Complete rubbish collection process and make	0	0.0
11	Complete cemetery services and make payment	0	0.0
12	Online voting	0	0.0

Table 5.6: Most to least common features within transaction stage

#### 5.4 Summary

The objective of this part of the research was to identify the extent to which New Zealand local councils have implemented e-government information and services. Using a maturity model developed from the most commonly applied and supported stage models for determining e-government maturity, this research examined the current state of local council websites and the levels of maturity that they have reached in terms of implementing online information and services using an assessment framework and scoring method adopted from Flak et al. (2005), Huang (2006), and Abdelsalam et al. (2010). The assessment ranking corresponds to an understanding of a council's maturity in e-government development. While this does not constitute a formal validation, the assessment tool does at least provide a reality check on e-government development.

The overall maturity results indicate that all 67 local councils have implemented e-government information and services on their website to some extent and that there is a very general correlation between the level of maturity and the population of the council, although with many exceptions. This supports the findings of a study of Spanish local government (Claver-Cortés, et al., 2006) and a study of USA counties (Z. Huang, 2006), which both found a positive relationship between the level of maturity and the population within the local government areas. However, Flak's et al. (2005) study on local government in Norway did not find such a relationship.

In terms of the level of maturity of the information stage, i.e. publishing information on council's services and activities and allowing the downloading of forms, the New Zealand

local councils as a group were found to have progressed considerably, with a cumulative score of almost 86% (Table 5.7). At the interaction stage, i.e. two-way communication between citizens and their local governments, the evaluation scores show a great degree of variability between councils. As a group, the councils had a cumulative score of only 34%, suggesting that local government needs to improve in this space as citizens expect a response to opinions, ideas or arguments that they put forward. As Mossberger and Wu (2012, p. 15) observe, “*Some local governments fear issues of censorship regarding incivility online from citizens, as well as the possible consequences of casual, unauthorized comments from government employees or elected officials. The way in which cities will navigate this new terrain will certainly influence the chances for fostering civic engagement in new ways*”. The transaction stage, i.e. online transaction capability, was found to be at an early stage, with relatively few councils having implemented this functionality. This suggests that more local e-government initiatives are required to implement transactional services allowing citizens to do their transactions with government electronically. No councils were found to have integrated their services or integrated services with other government agencies. All local councils are progressing through several stages of maturity and some of them found to be focusing more on later stages than previous. This suggests that the stages of the proposed e-government maturity model are non-linear.

	Stage	Number of features	Maximum score (N=67)	Mean (N=67)	%
1	Information	40	2680	2296.5	85.7
2	Interaction	23	1541	523.5	34.0
3	Transaction	12	804	134.0	16.7
4	Integration	5	335	0.0	0.0
Total		80	5360	2954.0	55.1

Table 5.7: Summary of evaluation stage-wise across all councils

Online services facilitating the political participation of citizens (distributed across the various stages of the proposed model) were found to have been implemented by several councils (Table 5.7). Although *e-voting* was not implemented by any council, *voter registration, consultation and submission*, and various forms of *online discussion* were found to be implemented by several councils (Table 5.8). These services are included in either stage two or three of the proposed e-government maturity model as they are less complex and do not require a higher level of technical sophistication (D.-Y. Kim & Grant, 2010).

<b>Features</b>	<b>Stage</b>	<b>N</b>	<b>%</b>
Online voting	Transaction	0	0.0
Webcasting council meetings/hearings	Information	3	4.5
Consultation and submission	Interaction	15	22.4
Voter registration	Transaction	22	32.8
Online chat / forum / discussion groups	Interaction	35	52.2

**Table 5.8: Local e-government websites support e-democracy**

## **CHAPTER 6      CITIZEN SURVEY DATA ANALYSIS**

### **6.0      Introduction**

Data collected through an online survey of citizens across New Zealand was intended to address the following research questions:

2. What are citizens' expectations of local government?
3. What influences citizen participation in local e-government?

This chapter analyses the survey responses, and presents the results and summarises the findings.

### **6.1      Data Analysis**

The main survey data file was downloaded in Microsoft Excel file format from the SurveyMonkey website and formatted. To ensure participant confidentiality, participants' voluntarily provided contact information, which was collected in conjunction with the prize draw and/or requests for a summary of the findings, was separated from the main data and stored in a separate file. As mentioned in the survey design section, the survey questionnaire had five sections and one of them (Section C) had 14 questions measuring *awareness, motivation, relative advantage, trust* and *importance* that were mandatory to answer. The main data in the Excel file was checked for any missing data in the mandatory section or any duplicate IP address or participant age below 18 years, and for any other missing information. Then, using Excel, frequencies and percentage distributions of respondents' demographic information were developed in tables to check that these responses were representative of the larger population of New Zealand.

#### **6.1.1    Sample characteristics**

It was noticed from the responses that 16 out of 336 participants bypassed the section B completely as it was non-mandatory and few participants had skipped some questions from section A. However, answers to the remaining items from all participants were found reasonable and complete (as it was mandatory) and therefore left as it was at the time of data formatting. Deleting responses from the analysis due to one or two absent data points would not be prudent, as the other key responses provided by participants would also be omitted. Demographic data for the survey respondents is presented in Table 6.1. The figures in Table 6.1 shows that the proportion of the female respondents slightly higher than the population of male respondents, which is consistent with the gender mix in the New Zealand population (<http://www.stats.govt.nz>). About 59% of the respondents

belonged to the 41-64 years age group, which was the largest age response category. Some 33% of the respondents were aged between 18 and 40 years, with the remaining 8% being 65 years or older. As would be expected in an online survey 100% of 332 respondents reported currently having access to the Internet. Further, 96% of these reported having access to a broadband Internet connection, which is consistent with data from the 2012 Internet Service Provider Survey, which reported that 93% of fixed Internet subscribers are using a broadband connection (<http://www.stats.govt.nz>). Further, Table 6.1 indicates that the survey respondents primarily accessed the Internet either from home (56%) or from the workplace (35%), with the combined access from these two locations being some 91%. About 6% of the respondents used a mobile phone or other mobile device as their main means of access to the Internet. In comparison, the 2012 Internet Service Provider Survey reported that 58% of New Zealanders use a mobile phone to access the Internet (<http://www.stats.govt.nz>). These figures suggest that the slower and more expensive mobile access means that people still rely on desktops computers and other non-mobile devices as their primary means of access to the Internet.

<b>Gender (N=328)</b>	<b>Frequency</b>	<b>% of total</b>
Female	167	50.9
Male	161	49.1
<b>Age (N=334)</b>		
18-25 years	34	10.2
26-40 years	77	23.1
41-64 years	196	58.7
>64 years	27	8.1
<b>Internet access (N=332)</b>		
Yes	332	100.0
No	0	0.0
<b>Broadband access (N= 334)</b>		
Yes	322	96.4
No	12	3.6
<b>Main Internet access location (N=336)</b>		
Home	187	55.7
Workplace	117	34.8
Mobile phone or device	21	6.3
Place of education	6	1.8
Public library	1	0.3
Internet café	1	0.3
Other	3	0.9
<b>Prior visit to local council website (N=328)</b>		
Yes	281	85.7
No	47	14.3

Table 6.1: Summary of respondent demographic profile

Table 6.2 shows the reported frequency of respondents' use of their local council website to access the information or services. Some of 86% of respondents has previously visited their local council website. Around 14% of respondents reported not using their local council website at all, which is consistent with figure reported for never having previously visited the local council website. The higher frequency reported use was at least once in 6 months (29%), although frequency of usage was roughly evenly distributed across the remaining categories. Some 40% of respondents reported using their local council website monthly or more frequently.

Frequency of use of local council website (N=336)	Frequency	% of total	Cumulative frequency %
At least once in a week	66	19.6	19.6
At least once in a month	67	19.9	39.5
At least once in 6 months	96	28.6	68.1
At least once in a year	59	17.6	85.7
Not at all	48	14.3	

**Table 6.2: Summary of respondent demographic profile**

Table 6.3 shows summary of respondents by region within New Zealand. Just over 40% of the respondents were from the Auckland region, the largest in the country in terms of population (34% of the total population). The proportion of respondents from the other regions was between 2% to 6% of the total respondents. Table 6.3 also shows the response rate per 10,000 people for each region. The survey response rate for the national population was 0.75 per 10,000 and the regional response rates varied between 0.11 to 3.95. The lowest response rate was from Canterbury region at 0.11 per 10,000, which is probably due to the earthquakes that have been experienced there. The response rates for the more heavily populated Wellington and Waikato regions were considerably below than average response rate, while a number of less populated regions such as Gisborne, West Coast, Nelson and Tasman tended to have considerably higher than average response rates per 10,000. Although the sample is not strictly representative of the population distribution of New Zealand, overall, a good distribution of responses was obtained.

Region (N=329)	Frequency	% of total	Population of region	Response per 10,000
Northland	13	4.0	158,200	0.82
Auckland	134	40.7	1,486,000	0.90
Waikato	15	4.6	413,100	0.36
Bay of Plenty	15	4.6	277,100	0.54
Gisborne	16	4.9	46,600	3.43
Hawke's Bay	11	3.3	155,300	0.71
Taranaki	19	5.8	109,700	1.73
Manawatu-Wanganui	12	3.6	232,400	19.4
Wellington	15	4.6	487,700	0.31
Nelson	11	3.3	46,200	2.38
Marlborough	7	2.1	45,600	1.54
Tasman	14	4.3	48,100	2.91
West Coast	13	4.0	32,900	3.95
Canterbury	6	1.8	560,700	0.11
Otago	18	5.5	209,900	0.86
Southland	10	3.0	94,900	1.05
Grand Total	329	100.0	4,404,400	0.75

Table 6.3: Summary of respondents by region

### 6.1.2 Citizen expectations

Table 6.4 shows the types of information that respondents expected to be able to access from their local council website. Information about the council and forms for downloading were the services most sought after by respondents. In contrast, a much smaller proportion of respondents (27%) wanted their local council to provide information on business opportunities available in the local region. The difference could be because local government is seen more as an organisation for delivering community services and developments than providing personal or commercial services. Within an area, there are several organisations other than the local council that provide business information; for example, the Chamber of Commerce. About 26% respondents sought information about 83 different council-related issues or services. These were provided by respondents in an 'other' category under the current and next two questions on citizen expectations as free formatted text, which were subsequently coded and grouped under information, services and communication, and presented under each question. Information on property and rating information, council meetings, agendas and minutes, waste and recycling, council plans, policy and strategy, library services, and licensing were the most sought after other information by these respondents.

Information wanted from council website (N=320)		Frequency	% of total
Downloading council forms		275	85.9
Information about council		268	83.7
Information about council representation and policy making		238	74.3
Disruptions or changes to council services		237	74.0
Tourism and recreational opportunities		197	61.6
Potential business opportunities		87	27.1
(N=86)	Others	83	25.9
	Property and rating information	10	
	Council meetings, agendas and minutes	6	
	Waste and recycling	6	
	Council plans	5	
	Policy and strategy	5	
	Library services information	5	
	Licensing	5	
	Community groups	4	
	News and events	4	
	Job vacancies	3	
	Maps	3	
	Miscellaneous information expected: Building regulations, Emergency services, Contact details, GIS, Resource consents, Transport services, Building consents, Cemetery information, Civil defence, Community grants, Community information, Customer services, Demographics, Facility development, Laws for horses, LIM reports, Noise control, Opportunities for ratepayers, Parking information, Pests and diseases, Rainfall and river levels, Rights and obligations regarding neighbours, Road conditions	27	

Table 6.4: Information expected from council website

Responses for expectations of online council services are presented in Table 6.5. The figures reveal that over 73% of respondents expected all of the main services, mentioned in the survey, to be available online. A high proportion of respondents expected the facility to pay rates online (85%) or to access building or resource consent applications online (81%). In the ‘other’ category, some 22 different services were listed by 6.5% of the respondents. Online library services and online payments were the most common other services requested by these respondents.

Services expected online (N=336)		Frequency	Percent
Rates payment		285	84.8
Building or resource consent applications		273	81.3
Payment of fines		258	76.8
Licensing or certification applications		254	75.6
Rate rebate applications		245	72.9
(N=22)	Others	22	6.5
	Library services	4	
	Online payment	4	
	License payment	3	
	Miscellaneous services expected: Application status tracking, Community grant applications, Cemetery database, Discussion forum, Job applications, LIM reports, Personal information update, View rates balance	11	

Table 6.5: Online services expected from council

The different types of online communication with their local council expected by respondents are shown in Table 6.6. Over 80% of respondents expected their council to allow online consultation and submissions on council plans and policies. A similar proportion of respondents expected to be able to contact their councillors and council officials online, and almost 69% expected online voting in council elections. Only 39% of respondents expected information on business opportunities to be communicated to them, which was lowest among the types of communication respondents expected. A similar trend in responses was noted for expected information on ‘potential business opportunities’. In the ‘other’ category, respondents entered additional types of communication that they expected to be able to conduct with their local council. As shown in Table 6.6, 4.8% of respondents expected a further 16 types of communications to be available online on their local council websites. Online complaint or reporting of issues was the most common additional communication requested by respondents.

Types of communication with local council (N=336)		Frequency	% of total
Make submissions on local government plans and policies		270	80.4
Contact local government councilors or officials		262	78.0
Vote online in local council elections		230	68.5
Receive information about potential business opportunities		131	39.0
Others		16	4.8
(N=16)	Online complaint \ report issues	7	
	Link to other governments	2	
	Making appointments	2	
	Miscellaneous communication expected: Blogs, Land title information, Remote access to hearings, Skype/video/audio conferencing, Webcasting of council meetings	5	

**Table 6.6: Online communication expected with council**

### **6.1.3 Awareness of local e-government**

In terms of citizen’s local e-government awareness (Table 6.7 and Figure 6.1), almost 55% of respondents indicated that they were aware of the range of online information and services offered by their local councils (i.e. ‘agree’ or ‘strongly agree’). Some 25% of respondents were unaware of the range of online council information and services (i.e. ‘disagree’ or ‘strongly disagree’). It seems reasonable to assume that the nearly 21% of respondents in the ‘neither agree nor disagree category’ were indicating that they had some awareness or expectation of their local council offering online information and services, but were not familiar with the range of information and services offered.

Awareness	I am aware of the range of online information and services offered by my local council (N=336)	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
	Frequency		30	53	70	143
	% of total	8.9	15.8	20.8	42.6	11.9

Table 6.7: e-Government awareness

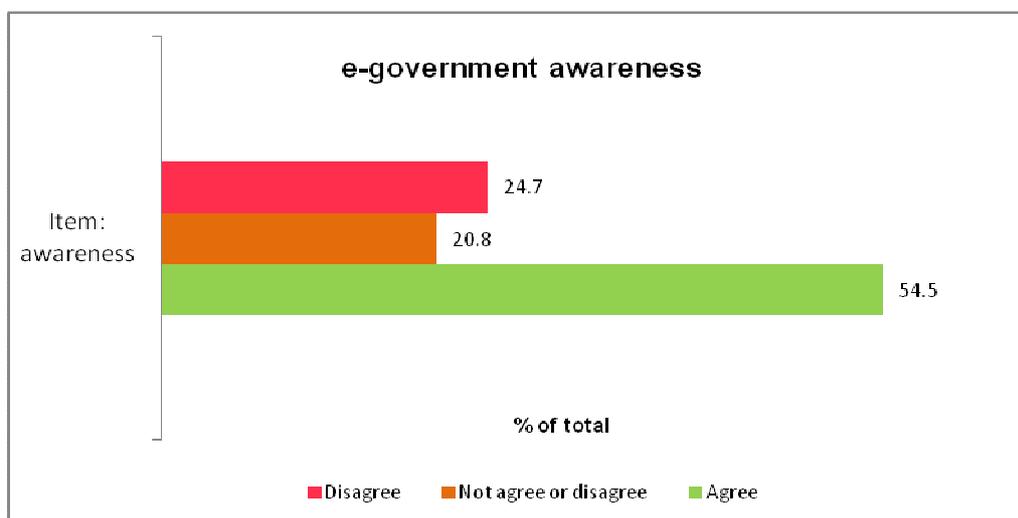


Figure 6.1: Local e-government awareness

#### 6.1.4 Motivation to use local e-government

In order to examine citizens’ motivation to use local council online information and services, four different aspects of motivation to use were explored. The responses for each aspect are summarised in Table 6.8. In addition Figure 6.2 presents aggregated responses for each aspect (where the percentage agreeing is the combination of ‘agree’ and ‘strongly agree’ responses, and the percentage disagreeing is the combination of the ‘disagree’ and ‘strongly disagree’ responses).

About 33% of respondents were satisfied with the availability of online information and services from their local council. However, this means that a high proportion of respondents (67%) were either dissatisfied or ambivalent about the availability of online information and services suggesting that a substantial number of respondents had mixed experiences with using local government online information and services, wanted more to be available or felt that those available did not reach their expected standards. In terms of the support provided by a local council to use its online information and services, 30% of the respondents were satisfied with this, while 24% of the respondents were not. Almost half of the respondents (47%) fell into the ‘neither agree nor disagree’ category, suggesting that they either had never asked for online assistance or were not aware of such a facility. Respondents were somewhat more evenly distributed in terms of whether they usually

obtain the information and receive the services they were seeking online via their local council website. Nevertheless, even though 38% of respondents stated that they do usually obtain the online information and services sought, that still leaves 62% of respondents who apparently did not. The implication is that local councils may need to provide more of the information and services required by their citizens online. In terms of respondents' overall motivation to use local e-government, just half (50%) reported that they were motivated to use online information and services from their local councils' website. Only 21% of respondents were not motivated to use their councils' online information and services.

Motivation	Item 1: I am satisfied with the availability of online information and services from my local council (N=336)	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
	Frequency	16	73	138	103	6
	% of total	4.8	21.7	41.1	30.7	1.8
	Item 2: I am satisfied with the support provided for me to use online information and services from my local council (N=336)					
	Frequency	16	62	157	92	9
	% of total	4.8	18.5	46.7	27.4	2.7
	Item 3: I usually obtain the information or receive the services I am seeking online via my local council website (N=336)					
	Frequency	37	72	98	116	13
	% of total	11.0	21.4	29.2	34.5	3.9
	Item 4: I am motivated to use online information and services from my local council (N=336)					
Frequency	18	51	99	127	41	
% of total	5.4	15.2	29.5	37.8	12.2	

Table 6.8: Motivation to use local e-government

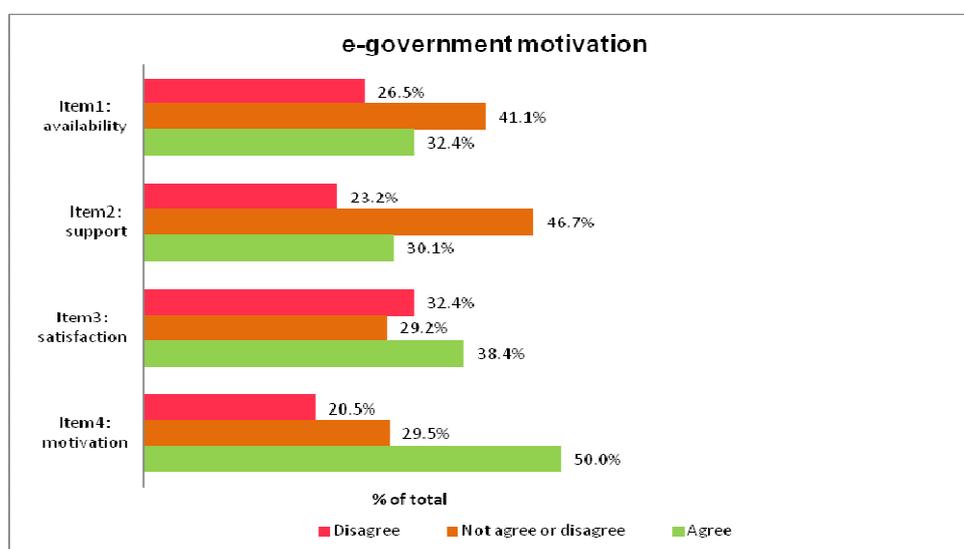


Figure 6.2: Motivation to use local e-government

Figure 6.3 shows the overall distribution of responses for a composite measure of motivation to use local e-government derived by averaging responses across the four aspects surveyed. Only 38% of respondents were motivated to use online information and services. The substantial proportion of respondents (37%) who were ambivalent about using online information and services represents a significant group of people who may become motivated to use the information and services on their local council website by improved availability, support or coverage.

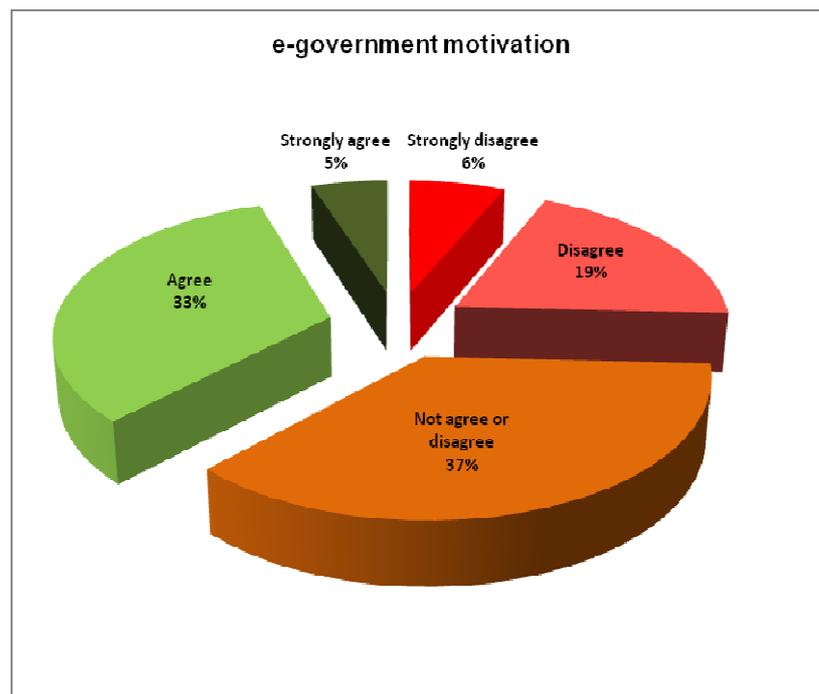


Figure 6.3: Overall motivation to use local e-government

### 6.1.5 Relative advantage of e-government

In order to investigate citizens' perceptions about the relative advantage of using local council information and services online compared to traditional channels, six different aspects of relative advantage were explored. The questions and summary of responses are shown in Table 6.9 and Figure 6.4. A substantial proportion of the respondents perceived using online information and services from their council to be less time-consuming (65%), more convenient (65%) and cheaper (59%) than face-to-face or telephone interaction. A similar proportion (66%) also believed that accessing information and services online provided greater flexibility in terms of suiting the way they liked to do things (anytime, anywhere). This means that in terms of time commitment, convenience and cost and flexibility, the majority of respondents believe that local council information and services online are more beneficial than through traditional channels.

Relative advantage	Item1: Using online information and services from my local council is less time-consuming than face-to-face or telephone interaction (N=336)	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
	Frequency		8	48	63	142
% of total		2.4	14.3	18.8	42.3	22.3
Item2: Using online information and services from my local council is more convenient than face-to-face or telephone interaction (N=336)						
Frequency		11	38	69	141	77
% of total		3.3	11.3	20.5	42.0	22.9
Item3: Using online information and services from my local council is cheaper than face-to-face or telephone interaction (N=336)						
Frequency		8	31	98	150	49
% of total		2.4	9.2	29.2	44.6	14.6
Item4: Online information and services from my local council is of higher quality than from face-to-face or telephone interaction (N=336)						
Frequency		11	92	167	55	11
% of total		3.3	27.4	49.7	16.4	3.3
Item5: Using online information and services from my local council fits the way I like to do things (N=336)						
Frequency		7	29	77	166	57
% of total		2.1	8.6	22.9	49.4	17.0
Item6: Using online information and services from my local council provides me with better control than face-to-face or telephone interaction (N=336)						
Frequency		8	71	129	101	27
% of total		2.4	21.1	38.4	30.1	8.0

Table 6.9: Perceive relative advantage for local e-government

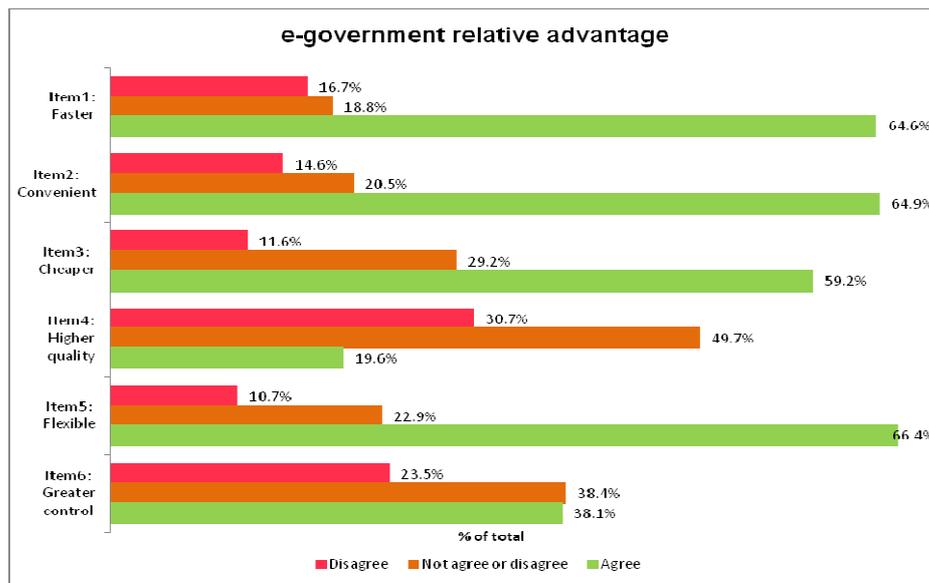


Figure 6.4: Perceived relative advantage of local e-government

In contrast, only 38% of respondents believed that using online information and services gave them better control over proceedings than face-to-face or telephone interaction. Although less than 20% of respondents perceived the quality of information and services sourced online to be higher quality than those obtained from face-to-face or telephone interaction, another 50% were ambivalent, suggesting that at least the quality is not lower than from traditional channels. Using a composite measure of relative advantage (derived by averaging the responses for the six items in Table 6.9), 52% of respondents agreed that using online information and services provided a relative advantage over face-to-face or telephonic interaction (Figure 6.5). In contrast, 18% of respondents believed using information and services provided a relative disadvantage and 30% believed using online information and services provided neither a relative advantage nor disadvantage.

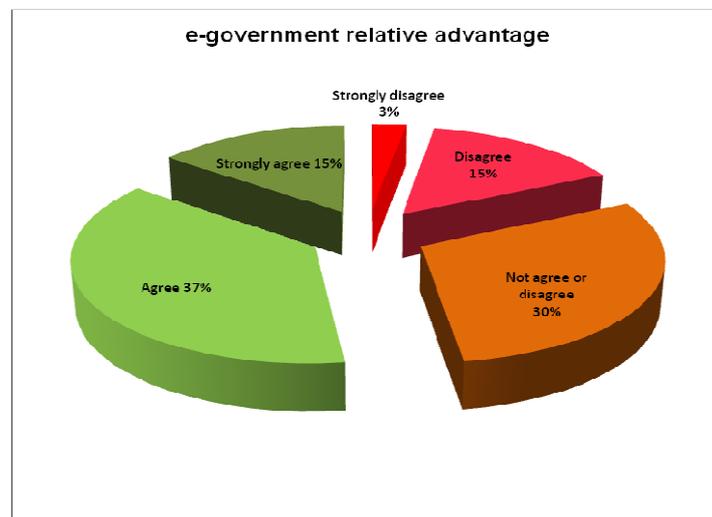


Figure 6.5: Overall perceived relative advantage of local e-government

### 6.1.6 Trust in online e-government

Two questions were used in the online survey to investigate the extent to which people trust using online information and services from their local council. Responses are summarised and shown in Table 6.10 and Figure 6.6. In terms of privacy and information security, 55% of respondents were confident that their privacy and personal information were safe in using online information and services of their local council. Nearly 60% of respondents were confident about the security of any online transactions they conducted with their local council. Of potential concern to local councils wishing to move more of their services online in the future is that there were still respondents who were worried about the safety of their personal privacy and security of information (12%) or performing online transactions (9%). Figure 6.7 shows that the distribution of responses for a composite measure of trust derived by averaging the responses for the two items in Table

6.10. Over half of respondents (57%) trust using online information and services provided by their local councils while about 11% of respondents do not.

Trust	Item1: I am confident that my personal privacy and information will be safe using online information and services from my local council (N=336)	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
	Frequency	5	35	112	159	25
	% of total	1.5	10.4	33.3	47.3	7.4
	Item2: I am confident that online transactions I conduct with my local council will be secure (N=336)					
	Frequency	4	27	105	169	31
	% of total	1.2	8.0	31.3	50.3	9.2

Table 6.10: Trust in local e-government

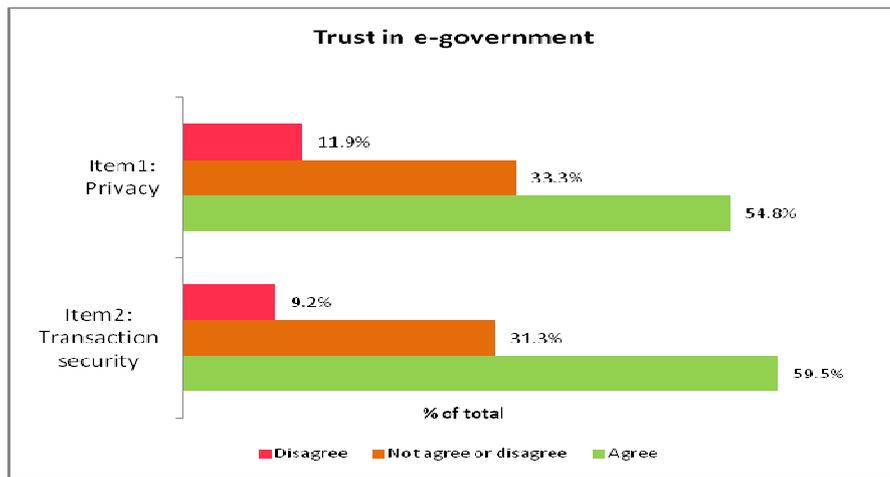


Figure 6.6: Trust in local e-government

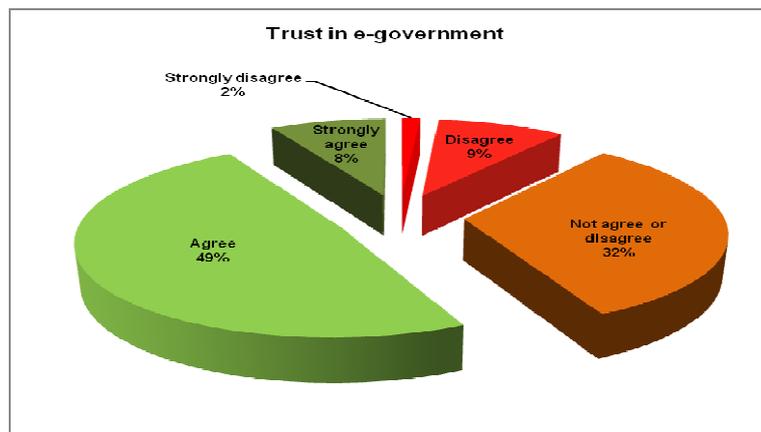


Figure 6.7: Overall trust in local e-government

### 6.1.7 Importance of online local e-government

The final question in the survey asked about the overall importance of online local e-government (Table 6.11 and Figure 6.8). Despite concerns over personal privacy and information, and a lack of awareness of local e-government or motivation to use online local council services that may exist for some respondents, the majority (87%) clearly indicated the importance of online provision of information and services by their local councils while only 3% of respondents disagreed that the provision of online information and services was important to them.

Importance	Item1 It is important to me that my local council provides online information and services (N=336)	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
	Frequency	5	5	33	155	138
	% of total	1.5	1.5	9.8	46.1	41.1

Table 6.11: Importance of local e-government

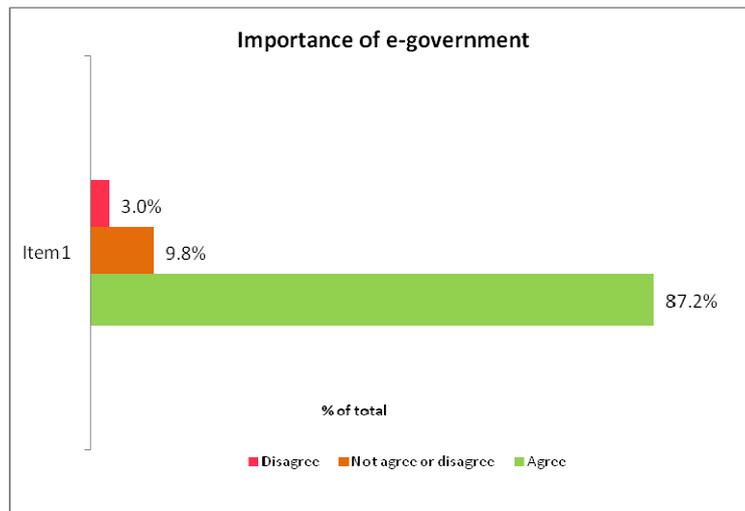


Figure 6.8: Importance of local e-government

### 6.1.8 Comments on local e-government

An option was provided in the survey for respondents to make further comments on the provision of online information and services by their local councils. Some 76 respondents (23%) took advantage of this opportunity, providing 93 comments. These comments were captured as free-formatted text, and were subsequently coded and grouped as shown in Table 6.12.

If you would like to make further comments on the provision of online information and services by local government in New Zealand (N=76)	Frequency	% of respondents answering
Poor website design	29	38.2
Traditional channels preferred	14	18.4
Need for up-to-date online information	9	11.8
Need for more citizen engagement	6	7.9
Online transactions unavailable or problematic	5	6.6
Digital divide issues	2	2.6
Good local council website design	2	2.6
Lack of links to other organisations	2	2.6
Too many councils in a region	2	2.6
Others	22	28.9

Table 6.12: Summary of further comments on local e-government

The information in Table 6.12 shows that 38% of those responding to the question commented negatively on their local council’s website. In particular, respondents found it hard to retrieve information and access services from their councils’ websites:

*“You can search online for hours without getting what you want.”*

*“Information is there but increasingly hard to locate on the sites. It is almost that if it is controversial, it is even harder to find! Most council websites are clunky beyond belief, ugly and require immense patience to use!”*

*“Certainly nothing of any importance ever seems to be locatable.”*

*“Getting information from the council has become more & more difficult.”*

Some respondents found that the information and services provided on the council website were confusing and sometimes conflicting:

*“Getting an answer burns off time. Many Govt sites are shocking.”*

*“[You] need to phone the council to make sense of the conflicting information on their website.”*

*“Website layout is confusing.”*

In addition, some local council website content was reported to be full of jargon instead of generic terms, have a poor layout or lacking common or minimum standards. Even some recently upgraded council websites were disappointing:

*“I would say the website, although recently “upgraded” is pretty crap – it’s extremely difficult to access information.”*

*“[W]ebsite is not laid out in a logical fashion and [is] hard to navigate.”*

Only 2 respondents commented positively about their councils’ websites, noting that they were convenient and user friendly; for example:

*“Online services are very good, I find it easy to use and can always get the information I need and make payments.”*

Some 14 respondents felt the need to express their preference for either face-to-face or telephone interactions over online information and services. Some of these respondents preferred calling or visiting the council because they found it more convenient, preferred the “*personal touch*” or “*human face of their services*”, or obtained faster resolution of problems encountered. Others commented that with “*face to face you (should be) guaranteed of correct information with no wriggle room to interpret it wrongly*”. Another group of 9 respondents reported that the information and services available on their councils’ websites were not up-to-date or accurate:

*“Online information should always be updated to reflect current issues.”*

*“[The] majority of the content provided online is not accurate.”*

Six respondents commented that their local council needed to encourage citizens to participate in councils’ plans and policies and needed to be more transparent:

*“Councils complement their websites with the engagement of citizens with social media in an interactive (not broadcast) way. This is more convenient for people than writing huge, confusing submissions”.*

*“Transparency is something the ... Council knows nothing about.”*

Another 5 respondents complained that availability of transactional services were not available or that payment through credit card was not allowed or “*incur[red] additional charges*.” Two respondents argued that local councils should never replace face-to-face or telephone services with online information and services as there were many residents and ratepayers who were aged, disabled, poor or technologically unaware and would not be able to avail themselves of online information and services from their local council (so-called ‘digital divide’ issues). Another two respondents suggested that too many councils existed in their regions, presumably advocating for amalgamation, and two respondents commented on the need for links to other organisations from the local council website. The remaining 22 comments were grouped under an “others” category, which included the non-availability of an online forum, broadband Internet connection, or a common local e-government interface.

## **6.2 Summary**

The online survey received a good distribution of responses from citizens across the country with over 40% from Auckland region. Over 80% of respondents expected 'downloading council forms' and 'information about council' to be available on their local council website while only 26% expected local council to provide personal or commercial services. Regarding online services, 'paying rates' and 'apply for building consent or resource consent' were sought by over 80% of respondents. In regard to communication, the most common services sought were 'allowing online consultation and submissions on council plans and policies' and 'allowing citizens to contact their councillors and council officials online'. This is followed by 'online voting in council election' and 'ability to lodge complaint or reporting of issue online'.

Nearly half of the respondents remained either unaware or not familiar with the benefit that e-government could offer. The lack of *awareness* of e-government services could be due to limited initiatives in providing information about e-government services. It is also noticed citizens were less *motivated* to use information and services online, meaning citizen did not perceive personal need for using online information and services or poor website design or incomplete or contradictory information on local council website could have impacted citizen's motivation to use council online services negatively. A high proportion of respondent perceived use of e-government services is less time-consuming, more convenient, cheaper than traditional channels and has higher flexibility. On the contrary a low proportion believed that e-government provides them with better control or higher quality of information. Nearly 60% of respondents were confident about the security of any online transactions they conducted with their local council while about 55% perceived that privacy of their personal information is protected by their local council. Although there is lack of awareness and motivation, a high proportion (87%) indicated the importance of online provision of information and services by their local councils. On general comments, respondents raised several issues including poor website design, conflicting information on website and not up-to-date information the most compared to couple of respondents commented positively about their councils' websites.

## **CHAPTER 7      LOCAL GOVERNMENT INTERVIEW DATA ANALYSIS**

### **7.0      Introduction**

Data collected through telephone interviews of local government official was intended to address following research questions:

4.      What objectives do local government bodies have when setting up e-government initiatives?
5.      What are the barriers for local e-government implementation?

This chapter analyses the responses of the interviews presents the results and summarises the findings.

### **7.1      Data Analysis**

As mentioned earlier, content analysis was used by the researcher to analyse the interview data and identify concepts and initiatives taken by local governments as well as the barriers they had faced or were facing in implementing on-line information and services. Both the inductive and deductive approaches were used to analyse the data since the interviews included both open-ended questions and specific questions on factors that were perceived as barriers to e-government initiatives.

#### **7.1.1    Local e-government**

Interviewees were asked to characterise the level of e-government provided by their council. Interviewees provided a range of evaluative comments intended to represent this or described the type of online information and services provided. The reported levels of information and services (interactivity and transaction capabilities) provided by a council were derived from these descriptions and are summarised in the first part of Table 7.1. While virtually all the councils reported having a minimal level of e-government in the form of information sharing with their citizens, there is clearly still room for improving levels of service provision. For example, only 35% of the local councils reported moderate to high online interactions with their citizens, and 33% reported limited capabilities for online transactions. Based on various combinations of these online services, each council was categorised into one of three overall relative levels of e-government: low, moderate or high, which are shown in the second part of Table 7.1.

Strategy	How would you characterise the level of e-government currently provided by your organisation? (N=43)		Frequency	% of total
	Information sharing		42	97.7
	Low interaction		18	41.9
	Moderate interaction		11	25.6
	High interaction		4	9.3
	Low transaction		14	32.6
	Unable to answer		1	2.3
	Level of e-government (N=43)	Definition	Frequency	% of total
	Low	Information, no or low interaction, no transaction	23	53.5
	Moderate	Information, moderate or high interaction, no transaction or Information, low or moderate interaction, low transaction	15	34.9
High	Information, high interaction, low transaction	4	9.3	
No answer		1	2.3	

Table 7.1: Level of local council e-government

As shown in Table 7.1, 54% of the local councils were categorised as providing a *low* level of e-government, in that they largely published static information on their websites, with little or no online interactivity. This typically represents one-way communication between a council and its citizens in which the latter could retrieve information on the council’s activities and services, and download application forms. The following quotes illustrate the kind of comments interviewees made about the low level of e-government that they perceived their council provided (references comprise the question number and council id):

*“We are probably sitting at an infant stage in terms of technology.”* (Ref: 01-31)

*“Our existing maturity is certainly low.”* (Ref: 01-07)

*“I don’t think we have any e-government services at all apart from basically being able to send an email through to council.”* (Ref: 01-32)

One of these councils reported not having any development or implementation activities taking place at the time of the interview:

*“The level of e-government would be pretty minimal. To be honest, I don’t think we are particularly involved in it at all.”* (Ref: 01-37)

About 35% of the local councils were categorised as providing e-government information and services at a *moderate* level. In addition to providing static information on the council activities and services, these councils either (a) provided moderate to high online levels of interaction with their citizens, but no online transaction capabilities; or (b) provided low to moderate interactivity but also some limited online transactional capability. The following

interviewee quotes illustrate the importance placed on Internet-enabled e-government services by many of these councils:

*“We have everything pretty much except our rates payments online.”* (Ref: 01-05)

*“We have Internet based functioning [for] the whole system ... People can lodge customer service requests online.”* (Ref: 01-15)

Only 9% of the local councils were categorised as providing e-government information and services at a *high* level. These councils had two-way online communication and high interactivity between themselves and their citizens, as well as offering limited online transactions:

*“The range of services we provide, I would say 70% of that is already available online. The only thing that is currently not done through e-commerce or e-transactions is complicated processes. For example, applying for a building consent, resource consent”* (Ref: 01-14)

*“We are currently providing basic functionality, payment services where ratepayers can pay for anything that they deal with and any online interactions with council”* (Ref: 01-22)

At the time the interviews were conducted, a number of the local councils had initiatives underway to improve their level of e-government service provision. The following quotes illustrate this intention to grow e-government capabilities:

*“For everything from rates to parking infringements to dog registration will all be able to be done online. We are hoping for the 6 month time frame. Certainly by the end of the year, that’s where we are aiming to be.”* (Ref: 01-15)

*“We will be changing our website and some of the interfaces where people can be more directly engaged in electronic communication.”* (Ref: 01-19)

*“We are going to be doing a lot more e-government.”* (Ref: 01-24)

During the interviews, some of the interviewees highlighted barriers that had influenced the progress of e-government development. These barriers include:

1. *Extra charges for credit card payment:* Local councils in New Zealand charge 2-3% extra on the fees or invoices paid by credit card in order to cover the cost of fees paid to credit card organisations, which has impacted the use of online transaction services. As one council manager commented:

*“For some online payment there was a pretty negative reaction to using credit cards for a while that tended to say well if you won’t allow people to pay by credit card then there isn’t a hell of a lot of use giving options through the e provisions I guess.”* (Ref: 01-02)

2. *Council structure*: There are many diverse business units within a council, which can make it difficult to cater for their many and varied needs, let alone provide coordinated and interconnected e-government services:

*“We have 35 different business units. [We have] our own budgets, our own managers - that’s how we define it. There are not many businesses that would argue that they have 35 different bits and pieces, so it’s quiet a tricky thing to go online in local government.”*  
(Ref: 01-05)

Because the managers of each unit usually decide what information and services are implemented online, there is a need for them to recognise or evaluate the importance of any information and service before it is implemented online – something that does not always happen. For example, according to an interviewee, community hall booking is a relatively simple process but one that is of high importance for the rate payers when they wished to book a facility for a function, especially after council working hours or during holiday periods. Since the manager of hall booking service had not realised the importance it was not available online for that council:

*“[T]he business managers of that activity don’t see that as important. That’s not them saying that’s not important, it’s just that they haven’t realised that it is important.”*  
(Ref: 01-12)

Further, what some interviewees perceived as their council’s bureaucratic nature was holding up progress in the e-government domain:

*“[W]e have got to lose a few of that bureaucracy and make for progress but that’s probably a call for others not for me.”* (Ref: 01-02)

3. *Complex processes*: Interviewees perceived that some of the processes associated with services were too complex to be provided online. For example, the building consent process was found to be not only very complex but required large amounts of information to be provided. As highlighted by a manager from a large council, dog registration was perceived to be difficult to provide online as it requires a considerable level of direct contact with the dog owner:

*“Dog registration is pretty difficult because you have got to communicate almost face to face really and hand over tags and collars ours and things”* (Ref: 01-02)

4. *Citizen requirements*: Local councils have limited knowledge of citizens’ e-government requirements or are unable to decide which service would be of high value, both of which may impede councils’ implementation of highly demanded services online:

*“[W]e’re looking at potentially implementing some online services. It hasn’t been determined which one are very important ones, need to be first, so we’re not sure which of them are going to be the really high value ones” (Ref: 01-25)*

5. *Geographical location:* In some councils, ratepayers are dispersed over large rural areas, where housing patterns are scattered, making infrastructure building difficult and availability of Internet services limited. For example, one of the councils interviewed reported having less than 1% of country’s population living across 10% of country’s land area. The default mode of communication with residents in those rural areas is by telephone or face-to-face:

*“We don't have a lot of e-government activities going on. Primarily because our rate payer base is very rural... we have a very large area. ... [O]ur primary communication tools with rate payers and with the general public are through either phone calls, mail and face-to-face”. (Ref: 01-31)*

6. *Central government policy:* Although the importance of e-government was recognised by all councils, the impetus for progressing e-government was sometimes attributed to a lack of an equivalent for local government of the central government’s e-government policy, which was not mandatory for local council to follow:

*“As per central government, [e-government] is mandatory for them [central government], which they have to do. Now local government has a lot of priorities which are statutory, they have to do. So the implementation of any e-government initiatives have been in my opinion limited mostly to website designs, and mostly to standardizing information sharing between various bodies.” (Ref: 01-01)*

7. *Evaluation criteria:* The Association of Local Government Information Management (ALGIM) evaluates and ranks local government websites every year, which enables councils to gauge their website standards compared to others. However, the criteria ALGIM use primarily focus on the availability of information on a website rather the number of features implemented. This was viewed as restricting progress towards e-government in local councils:

*“The body of information in the local government judging criteria of websites is totally focused their information, is mainly focused on the informational but not the transactional.” (Ref: 01-23)*

### 7.1.2 e-Government strategy

Only 6 interviewees reported that their local councils had a formal e-government strategy, leaving a surprising 86% of local councils, including a number of the larger ones, without such a formal strategy (Figure 7.1).

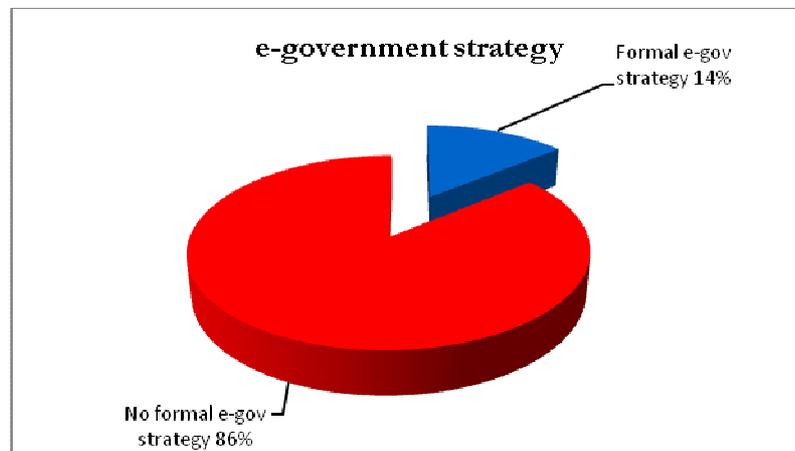


Figure 7.1: Formal e-government strategy

Examination of the interview data suggested a number of possible reasons for this: 1) Some small councils preferred to work on individual e-government ideas rather than an overall e-government strategy; 2) Other councils placed a low level of importance on online service delivery; 3) Local councils were waiting for ultrafast urban and rural broadband to be rolled out; and 4) Interviewees were unaware of wider e-government initiatives taken by the senior management of central government, or perceived e-government development as part of their councils' business as usual. The following quotes illustrate these reasons for not having a formal e-government strategy:

*“Wider e-government initiatives that have been taken-up by in the central government.... there isn't a lot of visibility here.”* (Ref: 2-03)

*“We can work on ideas without having a formal structure in place, being such a small organisation.”* (Ref: 2-04)

*“There is a lot of stuff going on, which I am sure you are aware of with central government, central government is also now overlapping on our local government.”* (Ref: 2-41)

However, some councils were either developing or had already developed e-government strategies which were under review or were in the process of finalising or planning to develop their own local strategies:

*“We have a draft , we call it online services strategic plan, and that’s probably three quarters completed, so yes there is a formal strategy that has been developed and we are in the process of finalising that”. (Ref: 2-07)*

Other councils preferred to follow ALGIM’s standards or policy or advice rather than developing a strategy of their own:

*“We are part of ALGIM. So for a start we will look where ALGIM has gone with their e government policies” (Ref: 2-10)*

Of the 14% of councils who had a formal e-government strategy, only one called it an “e-government strategy”. In most cases it was known as a “digital strategy” or was included within the “web”, “information”, or “IT strategy”. For example:

*“The digital strategy is largely e-government based because the strategy is all about pushing whatever we can through the digital channel. There is a whole lot of backend work that has to happen, for transformation of processes rather than building up resilience in the backend.” (Ref: 2-21)*

*“We have a web strategy that covers off e-government” (Ref: 2-35)*

*“We have an information strategy which has the online service components in it” (Ref: 2-25)*

Interestingly, in one case where a council had a formal e-government strategy, the interviewee reported that this had remained unchanged since it was developed, with the emphasis instead place on actions rather than words:

*“We already had one but it has not been updated or changed somewhat in the last six months, with more focus on actually what we are implementing, rather than just saying we are doing e-commerce.” (Ref: 2-14)*

Interviewees were asked the extent to which their council’s e-government strategy aligned with the government’s e-government strategy, considered citizens’ needs and perspectives, and incorporated e-democracy elements. Even in the absence of a formal e-government strategy, many interviewees felt able to answer these questions in relation to their councils’ approach to e-government. Table 7.2 summarises the responses from both groups of respondents to these questions.

Strategy	Does your strategy [or approach] align with the New Zealand government's e- government strategy? (N=43)	Councils with a formal strategy		Councils with no formal strategy	
		Frequency	% of total	Frequency	% of total
	Aligned	3	7.0	6	14.0
	Not aligned, but will align in the future	0	0.0	8	16.3
	Not aligned	2	4.7	11	26.6
	Unsure/no answer	1	2.3	13	30.2
	To what extent are citizens' needs and perspectives taken into account in this strategy [or approach]? (N=43)				
	Considered	5	11.6	24	55.8
	Not considered, but will consider in the future	0	0.0	6	14.0
	Not considered	1	2.3	4	9.3
	Unsure /no answer	0	0.0	3	7.0
	Does the strategy [or approach] incorporate e-democracy (online participation) as well as online services? (N=43)				
	Incorporated	2	4.7	13	30.2
	Not incorporated, but will incorporate in the future	1	2.3	6	14.0
	Not incorporated	2	4.7	10	23.3
	Unsure /no answer	1	2.3	8	18.6

Table 7.2: e-Government strategy: alignment, citizen needs, and e-democracy

Of the 6 councils, who had formal e-government strategy, only 3 (50%), councils reported that their strategies were aligned with the national e-government strategy. Of the councils lacking a formal e-government strategy, 6 indicated that their approach to e-government was loosely aligned with the government's e-government strategy. Thus, the figures in Table 7.2 indicate that only 21% of council's strategies or approaches to e-government were reported as being aligned with the New Zealand e-government strategy. One possible reason could be that New Zealand's e-government's strategy was not mandatory for local councils to follow. Those local councils that were found to have loosely aligned or followed the central government's strategy, tended to do so wherever they found it suitable:

*“e-government guidelines and strategies that are compulsory for central government websites are only a guideline for local government, so what we do is we try to align with these where possible and follow their best practice guidelines, but there are some other things that aren't always practical for local governments”* (Ref: 2a-20)

*“I think the concepts are broadly compatible. We haven't strongly aligned with it. We tried to drive it more from where we see benefit our district”* (Ref: 2a-07)

Altogether, 67% of councils reported that they already considered citizens' needs and perspectives in developing their e-government strategy or approach, and another 14% of councils indicated that they would be considering those needs in future. Often this was

reflected in a deliberate customer-centric orientation and/or was part of a customer engagement strategy that included the use of online channels:

*“So the strategy, in terms of a customer engagement strategy that we’re talking about, actually transforming business processes from system-centric to customer-centric is actually putting the customer into the heart of the organisation”* (Ref: 2b-09)

*“We want to engage with all parts of our communities rather than just sort of the vocal minority. And to be a sort of trend in local government and so it’s only been recently in the last few months that we have formulated a community engagement strategy and over the next 2 to 3 years that’s our time frame for implementing some of these.”* (Ref: 25-38)

One of the councils, which had a formal e-government strategy, reported they did not incorporate citizens requirements in their strategy, instead relying on benchmarking against other councils:

*“We haven’t necessarily done any yet, what we will look at is how well used the services that other councils have put in their websites. We haven’t directly asked our rate payers?”* (Ref: 2b-21)

The interview data revealed that local councils employ various systems and mechanisms to gather their citizen’s requirements and perspectives, including regular postal, online and SMS text surveys, focus groups, discussion forums, submissions, and analysis of usage statistics:

*“We have a universal communication survey which goes out every year to the selected portion or sample of our population and ask them questions about their interests in online services and we have also been collecting information through all parts of town”* (Ref: 2b-07)

*“We have now made a strategy more specifically looking at statistics around what services are used frequently.”* (Ref: 2b-14)

Overall, 35% of councils indicated that their strategy or approach to e-government incorporated some form of citizens’ online participation or e-democracy, and another 16% indicated that they would do so in the future. These councils had implemented a range of mechanisms such as online submissions, chat forums, live streaming video links that enable citizens to view council meetings, and the use of social networking tools such as Facebook. However, interviewees often acknowledged that more could be done in relation to this aspect of e-government, held back, for example, by the perceptions of council members or a lack of interest from citizens:

*“We have put things like meeting agendas online now, so that people can see when they are on, and minutes online published afterwards. We have toyed with the idea of live streaming online of*

*council's meetings but ... some of the council aren't currently happy with that approach so we are sort of treading water there. But it's likely that our online services strategy will also include things like blogging and online polls and things like that. So [we're] certainly in the e-democracy area."*  
(Ref: 2c-07)

*"We have had forums in the past, you know online forums, and we have tried to engage the rate payers online, but it's very difficult to drive them into it. You can't really drive them into it. They need to want it and request it in the first place, [and] they haven't really shown any interest in that."* (Ref: 2c-04)

Other councils were unaware of e-democracy or had not considered it in their strategy or approach since their e-government implementation was still at an early stage. Across the 43 councils, a range of units responsible for developing e-government strategy or implementing e-government services were reported (Table 7.3). The most commonly involved council units were ICT, communications and marketing, and corporate services. In some councils, responsibility was shared by several departments (so that the total units shown in Table 7.3 exceeds 43).

Strategy	Who or what unit within your organisation is responsible for e-government implementation and strategy? (N=43)	Frequency
	ICT	18
	Communications and Marketing	11
	Corporate services	8
	Customer/community services	5
	Strategy and policy	4
	Other	8

Table 7.3: Units responsible for e-government strategy and implementation

### 7.1.3 e-Government objectives

In terms of the various councils' goals and objectives in relation to e-government, the interview data were coded into a small number of categories, as presented in Table 7.4. A number of councils had more than one objective. Nearly 35% of local councils indicated that they are trying to empower or give greater facility to ratepayers through e-government. These councils believe that ratepayers benefit from being able to access council information and services online anytime and from any location, at their convenience. The following quotes illustrate the importance placed by interviewees on empowering ratepayers to use council information and services:

*"[Our] main goal is to make doing business with this council as easy as it can be. Our drive, our ethos of our customer services team and the team that is working for us is to actually to provide the*

services for customers where they want it and when they want it, and that's actually what's driving us and driving e-government" (Ref: 03-11)

"To provide those services online wherever we can, without constraints of place or time. And that's your work environment, so if you want to deal with midnight, you know if you're overseas and its 12 o'clock lunchtime there, and its midnight out here, then we're open for business. But it may not be to the same level of service standards which we do during business hours, but at least you can get your stuff into the web environment. That's the process where you can do more and more online transactions at your own pace." (Ref: 03-05)

e-government objectives	What are your organisation's main goals and objectives in relation to e-government? (N=43)	Frequency	% of total
	To empower citizens	15	34.9
	To enhance customer service	14	32.6
	To improve citizen engagement	8	18.6
	To reduce costs	6	14.0
	Other	5	11.6
	No objective	6	14.0
	Do these goals align with or conflict with other organisational goals? (N=43)	Frequency	% of total
	Aligned	32	74.4
	Conflict	5	11.6
Unsure	6	14.0	

Table 7.4: Goals and objectives and alignment with other organisational goals

Nearly 33% of interviewees perceived that e-government enables their local councils to improve customer service and enhance relationships with citizens. According to one interviewee, in many cases, the intention is to replicate the services that are currently available through the physical council offices so as to develop the Web as the main channel of communication:

*"The goal is (1) to make the web as the primary channel for communication and (2) is to develop as you said that two-way communication. And the other aspect of it is to provide every service that we can that you currently have to walk in the door for we want to create that on the Web."* (Ref: 03-35)

About 19% of the local councils believed that through e-government they can engage their community more easily and get them involved in taking part in council plans and policies, and community development. One council manager highlighted the possibility that e-government offered for accessing the views of members of the wider community who do not necessarily become engaged through traditional engagement channels:

*"[T]he main goals of our community engagement strategy, it's just to ensure that we are adequately representing the views of the wider community, across all sort[s] of age groups and the other*

*demographic factors, rather than just a small local portion that we normally bear from. That's probably the key driver, where we are equally representing all of our ratepayers' needs."* (Ref: 03-38)

Nearly 14% of the interviewees perceived that e-government reduces service delivery costs and improves internal efficiency as citizens can do for themselves some of the tasks that customer services or front-desk staff currently do. As one interviewee observed:

*"I guess one of the goals and objectives would be to reduce cost. The administration costs that they all have to come in and not have extra staff to handle it."*(Ref: 03-42)

Other e-government objectives and goals identified by interviewees include enabling increased transparency, becoming a leading digital service provider, and compliance with existing (governmental) standards. Some 14% of local councils indicated that they did not have either an e-government policy or measurable goals within their e-government policy and were concerned that their e-government initiatives would not deliver what had been promised. The quote below illustrates this point:

*"We have not got a clear goal. We are not going to deliver something high quality to our customers."* (Ref: 25-22)

In terms of the alignment with other organisational goals, the majority (74%) of local councils believed that their e-government goals and objectives are aligned with other organisational goals. As one interviewee noted, such goal alignment is often part of the organisational strategy:

*"They align with other organisational goals. It's actually an organisation strategy that was adopted by the information adoption strategic plan and as part of quite a large planning frame work that we work under."* (Ref: 03a-38)

Nearly 12% of the interviewees believed that their council's e-government goals and objectives conflict with other organisational goals. One of interviewees noted their online strategy and organisation strategies were from two different perspectives. Another council official indicated that their newly adopted digital strategy was different from the overall organisation strategy:

*"It conflicts in the sense this strategy has recently been adopted., We have a massive programme that we are embarking on and during this process some of the outcomes may differ from overall organisation objectives"* (Ref: 03a-09)

The remaining 14% of interviewees were either unsure whether their council's e-government goals aligned with other organisational goals or did not respond as their councils do not have an e-government policy.

#### 7.1.4 Collaboration

The data provided by the interviewees on the relative importance of collaboration between the functional units of a council and with external government organisations in the implementation of e-government were coded, grouped, and summarised as either important or not important. The results are in Table 7.5.

<b>Collaboration</b>	How important is collaboration with other government agencies in your organisation's e-government implementation? (N=43)	Frequency	% of total
	Important	26	60.5
	Not important	14	32.6
	Unsure/no answer	3	7.0
	How important is collaboration between functional units within your organisation in your organisation's e-government implementation is? N=43)	Important	Not important
	Important	34	79.1
	Not important	6	14.0
Unsure/no answer	3	7.0	

Table 7.5: Influence of external pressure for e-government implementation

#### External collaboration

Table 7.5 shows that nearly 61% of the council interviewees perceived it important to collaborate with other government agencies for local e-government implementation. The data show that collaboration between local councils was more important than with central government agencies, presumably because of a common focus. Some councils apparently leveraged off the work done by other councils in the e-government space in addition to engaging other councils to participate in their e-government development programme and share some of their benefits with them. The following quotes illustrate the importance councils place on the collaboration with other organisations:

*"[W]e don't inter-relate with central government departments. Whatever they [central government] do in their area, is not directly relevant to what we do in our area, even though we are basically doing the same sort of thing." (Ref: 04-37)*

*"A lot of time, a lot of people have really good ideas because they have already implemented them [local councils] and they have done the technical work behind it. For us to go in and follow what they have done." (Ref: 04-27)*

Inter-council collaborative initiatives included setting up discussion forums and establishing a common portal for a region:

*“[W]e wanted to get to have a portal as opposed to having individual council website and that would allow us to achieve more with the frame, without extra effort” (Ref: 04-31)*

ALGIM represents local government ICT issues and interests to central government, provides an on-line set of tools and resources designed specifically to assist with the effective management of information and provides a forum for networking, education and information sharing. Some local councils reported that they were in the process of implementing a unified method for exchanging information and facilitating collaboration between councils using a shared services model. Examples include shared library or geographic information systems (GIS) services:

*“We are currently working with part of a shared service ... [W]e are upgrading all our mapping information for all our customers, online mapping application, and we are doing that regionally. Eight councils that we have joined together with. And we are collecting the same system and we are standardizing all our mapping.” (Ref: 04-34)*

However, nearly 33% of the local councils perceived that collaboration with other government agencies was not important for e-government implementation. This may be due to a perception that councils are less aligned with each other and other government agencies due to conflicts of interest, or that each council will have its own preferences as to priorities and/or systems to use:

*“I think in local government we are possibly less aligned with other government agencies than you would find in central government.” (Ref: 04-20)*

*”[C]ouncil tends to have different time frames for some of their projects that quite don’t align with ours too well.” (Ref: 04-16)*

### **Internal collaboration**

Some 79% of local councils perceived that internal collaboration between the functional units within the council was important for e-government implementation (Table 7.5). Interviewees believed that internal units needed to work together for a common goal within the online environment to avoid negative impacts on the delivery of services:

*“[I]f the functional units do not collaborate amongst themselves, it may impact certain areas. Specifically, some functional units are responsible for a specialist purpose, so if they are not able to participate, we would not be able to provide that service”. (Ref: 05-21)*

*“[C]ollaboration between our functional units is essential just for the proper or functioning of any organisation.” (Ref: 05-28)*

*“[I]t will be very difficult for one department to do something without the support of another department.” (Ref: 05-34)*

In contrast, a small group (14%) of interviewees perceived that collaboration between functional units was not important for e-government implementation. This may have been because they viewed the delivery of online services as driven more by the underlying workflow systems than co-operation between functional units. Interviewees highlighted a number of barriers that they perceived had influenced the importance of internal collaboration in e-government implementation. These included:

1. *Functional independence:* A tendency for some council units to work in isolation as a result of prevailing business models:

*“They [council departments] are so self-contained and so independent, there actually hasn’t been a lot of cross pollination or lot of interaction.” (Ref: 05-28)*

2. *Lack of interest:* Some interviewees commented that inter-departmental collaboration was difficult to achieve unless people perceived benefits in doing so:

*“[I]t is difficult to get the buy-in from people unless they see a pay-off for them. It’s hard to get their time because they are very busy people.” (Ref: 05-29)*

3. *Job security:* Some interviewees suggested that inter-departmental collaboration was difficult if staff were fearful of losing jobs once e-government implementation started in earnest:

*“[I]t’s very hard to get that [working together] commitment because they are fearful of their jobs when you start looking at the e-services.” (Ref: 05-32)*

#### **7.1.5 Management support**

The figures in Table 7.6 indicate that council senior management is seen as being supportive of e-government initiatives in 79%. In one case, where the interviewee was the council chief executive, he directly confirmed the support he and his management team provide for e-government:

*“I am the top management. So I support it strongly. Yes and my management team do as well.” (Ref: 06-19)*

Management support	To what extent is there top management support for e-government in your organisation? (N=43)	Frequency	% of total
	Supportive	34	79.1
	Unsupportive	7	16.3
	Others / Unsure	2	4.7
	To what extent does your top management communicate the importance and benefits of e-government? (N=43)		
	Communicate	18	41.9
	No communication	13	30.2
	No answer	12	27.9
	To what extent does a good leadership influence e-government implementation in your organisation? (N=43)		
	High influence	24	55.8
	Low or no influence	2	4.7
	Unsure/no answer	17	39.5
	To what extent is there political support (Mayor and Councilors) for e-government in your organisation? (N=43)		
	Supportive	31	72.1
	Non supportive	7	16.3
	Others	5	11.6

Table 7.6: Management support for e-government

Other interviewees saw this high level of support being driven by a desire to reduce costs and increase efficiency in delivery of services, a commitment to innovation and attendant accumulation of IT knowledge:

*“Absolutely high priority for them. Again they see benefits in the way of doing business, in some respects are they cost savings which are always focused by the executive. But I think doing business better is more important in their minds.”* (Ref: 06-02)

*“One of our executive management goals is innovation and so they are really supportive of e-government as a concept.”* (Ref: 06-20)

*“Work is starting to get support with the chief executive, he is actually reasonably technically savvy, he certainly likes to play with toys, you know gadgets and widgets, probably more into IT than I am.”* (Ref: 06-28)

Only 16% of interviewees perceived that their council top management was unsupportive of e-government implementation. Possible reasons given included because such development was not seen as a priority, and/or senior management lacked an understanding of e-government:

*“[W]e don’t really run around and push that [e-government] as a high priority the moment because we’ve got so many other jobs going. We live in an e-government vs the district plan review environment. And the review [has a] much higher [priority].”* (Ref: 06-17)

*“I think if they understood what e-government means they probably would support it. But at the moment they don’t understand what it means. They don’t have a very good understanding of web technology and of what the website actually does.” (Ref: 06-06)*

### **Management communication**

Despite the majority of interviewees perceiving that council senior management was supportive of e-government, the figures in Table 7.6 show that at least 30% of interviewees considered that the importance and benefits of e-government were not being effectively communicated by their top management (almost all the councils where management were perceived as unsupportive did not comment on management’s communication of e-government):

*“Not as such ... But they support, they happily supportive building the infrastructure of the website, and maintaining the website, they happily supported all that. So you can say, yeah, quietly they can support it.” (Ref: 06a-18)*

*“I suppose they have an awareness. They have a good understanding ... [I]t’s not something they need to talk about everyday.” (Ref: 06a-38)*

On the other hand, nearly 42% of interviewees did indicate that their senior management communicated the importance of e-government on a regular basis. Often this communication came from the highest level of management:

*“Our CEO I suppose, he’s a real believer in it and that is passed down in the chain. For example, he was the one that drove us to set up a system internally that requires staff and managers to keep the content of our website relevant and that sort of thing, regularly makes sure it is all up to date, so he is really driving for anything that can help make our online environment a success.” (Ref: 06a-20)*

*“[The chief executive] is very supportive of strategy and development we are undertaking to the point where e-government initiatives are the topic in every single staff meeting that he holds, which is once a month so there is very strong support from top management.” (Ref: 06a-13)*

In some councils, top management communication of the importance of e-government appeared to be associated with encouraged participation in shared governmental services:

*“Yes, there is and it’s around shared government, what that means like building consents. Now we’re thinking of does that mean we do it with another council down the road or up the road, or why are we doing that ourselves, when its e-government and online?” (Ref: 06a-05)*

*“So probably [top management communicate] through our shared services group ... and also just down through our, telling us our prioritisation of our projects.” (Ref: 06a-34)*

## **Leadership**

Table 7.6 shows that 56% of interviewees think strong leadership was important for local e-government implementation in their councils. Interviewees indicated several management traits or abilities that were seen as required for a leader to be successful in local council e-government implementation. These included setting direction, quick thinking, leadership by example, obtaining buy-in and giving staff the opportunity to contribute to overall strategy. In addition, a requirement for budgetary power was cited by several interviewees. The following quotes illustrate some of these points:

*“We definitely need the support from management, they definitely have to lead by example.”* (Ref: 06b-04)

*“[Leaders] set the directions and they are the ones that approve or deny the initiatives. That is the essential part of things.”* (Ref: 06b-16)

*“I think in any sort of complex organisation, any significant changed process will fail without good leadership. In any significant change process, leaders must have buy-in capabilities.”* (Ref: 06b-26)

*“[U]ltimately you need the support of leadership to have these things go through because it always involves a lot of internal investments at least, and also poses a significant amount of risk from a public relations point of view sometimes.”* (Ref: 06b-39)

One interviewee suggested that, in order to positively influence e-government implementation in councils, leadership must have a comprehensive knowledge of all council activities, business processes capabilities and functions:

*“Knowledgeable. Sort of cross departmental knowledge. It’s not about the IT skills or anything like or the tools.”* (Ref: 06b-10)

A significant proportion (40%) of interviewees avoided this question, presumably because either they were unsure about the implication of leadership on e-government implementation or had not previously thought about it. Only 2 (5%) interviewees considered that good leadership would have minimal or no influence on e-government implementation, one of those suggesting that, ultimately, citizens decide the money to be spend on e-government initiatives:

*“So, it comes back to our residents and our ratepayers. Because they decide how much money they want to spend on this type of stuff.”* (Ref: 06b-17)

## **Political support**

Table 7.6 shows that 72% of interviewees perceived that there was political support from their Mayor and councillors for e-government initiatives. The following quotes reveal how this political support is perceived:

*“[T]hey are all very keen when we were doing the website and that kind of thing, that’s where we got some of the ideas about what we could be doing, particularly on the democracy side of things.”*

(Ref: 07-10)

*“[T]he community engagement has been reviewed and approved by one of the sub committees in council. So it received political support through that channel.”* (Ref: 07-38)

*“[F]rom a political perspective the politicians themselves are starting to uplift technology at quiet an alarming rate. Once again they are driven by their constituency. Definitely a lot of drive coming through that governance level.”* (Ref: 07-40)

Only 16% of interviewees reported not having political support for their councils’ e-government initiatives. Reasons given for this included the small size of the council, and a lack of interest or experience in e-government on the part of the political arm of the council:

*“No, we don’t have the political support we require.”* (Ref: 07-04)

*“I don’t if our politicians are that involved in it to be honest. Being business people themselves, they support the principle, but most of the drive is coming from our executive management.”* (Ref: 07-34)

### **7.1.6 Organisation culture**

A high proportion (65%) of interviewees reported that their organisation’s culture, i.e. attitude to innovation or change, helped to support e-government implementation in their councils (Table 7.7). A range of reasons were suggested for this, including organisational leadership, awareness of the possibilities offered by e-government, an innovative culture, and prior experience of change within the council:

*“We have spoken to all of our staff about the need for e-government. The reaction that we had from most of them were positive. I think we have got quite enough support amongst staff.”* (Ref: 08-16)

*“I think, generally, the support for e-government is getting better and better. And people are becoming more aware just what technology can do for them and how it’s going to enable us to bring the services closer to local government.”* (Ref: 08-24)

*“Of course, the council would see itself being extraordinarily open to innovation.”* (Ref: 08-26)

*“I think there is a good understanding that changes are a constant kind of thing. So there has been quite a lot of change in the organisation over the last 4 or 5 years.” (Ref: 08-23)*

Organisation culture	In what ways does your organisation’s culture (e.g. attitudes to and experiences of innovation and change) hinder or help support for implementation of e-government? (N=43)	Frequency	% of total
	Support	28	65.1
	Hinder	6	14.0
	Both support and hinder	3	7.0
	Unsure/no answer	6	14.0
	To what extent have resistance to change, internal conflicts or political issues influenced e-government implementation in your organisation? (N=43)	Frequency	% of total
	No resistance	19	44.2
	Resistance	12	27.9
	Unsure/no answer	12	27.9

Table 7.7: Organisation culture for e-government

One interviewee suggested that more support was received from younger council staff, who perhaps adopt new technology faster than older staff, who may be more resistant to change:

*“The younger people tend to pick it up a lot better in terms the use of technology. Some of the people that have been in the organisation for sometime, it’s a bit more problematic getting them to buy-in to changes that need to take place.” (Ref: 08-13)*

Only 14% of local council interviewees reported that their organisation culture could possibly hinder e-government implementation. Some interviewees suggested that a culture with a lack of desire for change contributed to this:

*“[C]ulturally, attitudes to new innovation are tricky, because local government people do not want to move, they stay on the job for life.” (Ref: 08-05)*

*“There’s not a lot of desire for change there’s a not a lot of belief that there’s any need for change.” (Ref: 08-42)*

Three interviewees (7%) considered that their councils’ organisational culture had the potential to both hinder and support the implementation of e-government initiatives. For example:

*“It’s a mixture, there are some existing processes of doing things that are hard to change, and there is also reasonable interest in doing things differently too.” (Ref: 08-03)*

Some 44% of interviewees perceived that there was no resistance to the changes associated with e-government initiatives. As one interviewee commented:

*“Everyone is on board and will change. It is part of our world now. We have to accept that. We used that as an advantage not a disadvantage.” (Ref: 08a-22)*

On the other hand, 28% of interviewees reported that e-government implementation is facing, or would face resistance, predominantly due to the amount, speed and the nature of changes their organisations were undergoing and their organisations’ ability to cope:

*“[A]t the moment our resistance comes from the amount of change. We have a lot of things going on and the organisation can only tolerate so much.” (Ref: 08a-07)*

*“I suppose [resistance] moderately. Just, maybe, the speed of change.” (Ref: 08a-14)*

One of the interviewees suggested that internal politics means that resistance will always exist in places within an organisation like a local council. This interviewee had experienced resistance to e-government initiatives throughout the organisation for both political and personal reasons:

*“ Sometimes the resistance has absolutely nothing to do with the objective. So resistance is only because you know they’ve got to, they are just being difficult and making a point, and we have got people like that at the moment ... [I]ts politics. Its internal crap, get it all the time” (Ref: 08a-28)*

### 7.1.7 Financial Resources

How the availability of financial resources impacts overall e-government implementation is presented in Table 7.8.

Financial resources	What role has the availability of financial resources played in implementing e-government in your organisation? (N=43)	Frequency	% of total
	Important	29	67.4
	Not important	14	32.6

Table 7.8: Importance of financial resources on e-government implementation

About 67% of interviewees considered that the availability of financial resources was important and in particular that an inadequate allocation of financial resources would slow down the progress of e-government implementation in their councils. Some of these councils had established a basic e-government presence within their constituency but it was obvious any improvements would need an injection of financial resources. It was evident in the interview data that smaller councils (i.e. with fewer ratepayers) had suffered from

restricted funds and difficulties in demonstrating a return on their investment in e-government:

*“So if your funds are limited, it restricts what you can do. If we had been in a better position financially, we would’ve had a lot more resources to work with. We are, like I said, a small organisation ... [T]here isn’t a big budget, so it means it’s a lot slower.”* (Ref: 09-03)

*“Mainly, especially for a small council, the return on that money that we spend is often very minimal, if at all and it is hard to justify a lot of that investment.”* (Ref: 09-39)

Several interviewees reported that in a weighing up of council priorities to receive limited financial resources, e-government initiatives often came off second best:

*“[I]f there is a sewage tracking problem, that’s possibly always going to win out in the budget stakes over implementing e-services”* (Ref: 09-40)

*“[O]bviously, we are putting our capital expenditure budget to the council and we are hoping they will approve it but when it comes to the final figure for rates its only to cut something out. If they need something for water, as water is more important than computers, they say that, so we might miss out.”* (Ref: 09-32)

Interestingly, one of the interviewees suggested that management or councillors needed to be appraised of and convinced of the importance of implementation of e-government as an overall organisational effort rather than as an IT project.

*“To stop senior management and councillors to think that this is merely an IT project, which promises lots of savings that are never really captured... It’s not the financial resources to go now [for e-government], it will be saving in the future. If they are not forthcoming because the story is not believed then there’s going to be significant constraint.”* (Ref: 09-23)

The other 33% of interviewees indicated that the availability of financial resources had little influence on the implementation of e-government initiatives in their councils. Generally, if the benefits of implementation were clearly defined and communicated, the financial resources were allocated as and when they were needed:

*“[T]he finance at this stage is not much of an issue ... [We are] in the midst of massive program, and it’s a multi-million dollar program which is going to span across a few years ... As part of the contract or the business case of the program, the web and e-government were already considered.”* (Ref: 09-09)

*“We need to have a reason to do it, before we have to worry about paying for it. We would have to convince the people [that it is] worth paying the money for.”* (Ref: 09-37)

*“If there is a case to do something and it does show a decent return on investment I don't think there will be any problem with this [finance].” (Ref: 09-31)*

*“It has not limited e-government implementation, we just have to find smarter and cheaper ways of doing things.” (Ref: 09-34)*

Even if availability of financial resources was not perceived to be an issue for e-government implementation, some of these interviewees highlighted alternative potential bottlenecks to e-government implementation, including the time taken to deliver e-government initiatives and the perceived demand for e-government:

*“Time is my issue not money.” (Ref: 09-35)*

*“No, it has to be the extent of speed by which we can deliver it.” (Ref: 09-12)*

*“Limiting us is the perceptions of a technology and speed of uptake rather than the money itself. The limiting factor is probably our expectation of what the demand is.” (Ref: 09-19)*

### 7.1.8 Human Resources

A range of questions related to the availability of appropriate human resources for e-government implementation were asked during the interviews. The replies were coded and summarised as shown in Table 7.9.

Human resources	What influence has the availability of technical expertise had on implementing e-government in your organisation? (N=43)	Frequency	% of total
	Impact on progress	27	62.8
	No impact on progress	10	23.3
	Unclear or no answer	6	14.0
	Is that technical expertise available within the organisation or is it sourced externally? (N=43)		
	Moderate or heavy outsourcing	23	53.5
	Limited or no outsourcing	13	30.2
	No answer	7	16.3
	To what extent is up-skilling or training required for of e-government staff? (N=43)		
	Up-skilling or training required	26	60.5
	No up-skilling or training required	7	16.3
	Unclear or no answer	10	23.3

Table 7.9: Implication of human resources on e-government implementation

Nearly 63% of the interviewees believed that the availability of suitable technical expertise had an impact on local councils' implementations of e-government. Generally, the two important factors that would adversely affect the speed and scope of e-government development were little or no familiarity with the technology required and a lack of financial resources to acquire that expertise. Conversely, unrestricted availability of

technical resources was considered by one interviewee to facilitate e-government implementation:

*“Yes to the extent that due to limited technical resource there will be, it will restrict the speed and scope of development. But also have an effect on financial side so because of the lack of resources we would have to outsource expertise and the funding will become an issue.”* (Ref: 10-14)

*“Yes, and the more people you have working on something the more you are going to get an outcome.”* (Ref: 10-20)

About 23% of the interviewees believed that the availability technical expertise was not an influence on e-government implementation in their councils. Possible reasons included adequate technical resources available either in-house or arranged through partnering with other councils (i.e. shared services) or organisations (IT consultants):

*“[W]e also partner with a number of our technology partners. We don’t believe that we are hindered by our availability of technical staff, technical contractors, really.”* (Ref: 10-16)

*“That won’t be a problem. I mean we have general reasonable IT within the council. We would probably have to get some folk in from outside, we would have enough people to manage that sort of relationship.”* (Ref: 10-37)

In terms of the sourcing of the technical expertise required for e-government implementation, Table 7.9 shows that just over half (54%) of the local councils tended to seek technical resources for e-government implementation externally more often than not. Many of these councils used a combination of internal and external technical expertise, often performing basic tasks and outsourcing the complex or highly technical parts. Some of these councils had even outsourced their entire e-government work. A few councils reported that they engaged external assistance for system implementation while their internal people maintained these systems and educated other internal staff in their use. The following quotes indicate the range of these councils’ approaches to sourcing appropriate technical expertise:

*“[I]t would be uneconomic for us to try and have all the resources you need internally given the nature of our business. I mean it just wouldn’t make sense.”* (Ref: 10a-11)

*“I mean from an implementation perspective, we try certain things, and bring in external expertise who sit along with our expertise and make sure that they transfer knowledge and so that we can maintain that ongoing.”* (Ref: 10a-25)

*“It would depend on the project ... [W]e have number of resources in-house that are skilled to be able to do a number of those projects, but obviously for some [projects there is a] reason to outsource.”* (Ref: 10a-40)

About 30% of the local councils reported only limited or no use of external resources in their e-government initiatives. These interviewees generally considered that their councils had the requisite technical expertise already in-house. However, some councils lacked the financial resources to acquire outsourced technical expertise and needed to make do with what they had in-house or leverage shared arrangements with other councils:

*“No we outsource as little as possible ... Again it comes back to utilizing other councils with sort of shared services, which is a key word at the moment.”* (Ref: 10a-10)

*“We don't have lots of money to make it happen so we have to be more creative and try and make things happen with less expense.”* (Ref: 10a-12)

*“Some of the projects to enact the strategy, they require skills that we don't have in here or require time, we can't free our resources internally. We need to outsource and that is the challenge because we need to fund it.”* (Ref: 10a-21)

With regard to training requirements or up-skilling of council staff in order to facilitate and maintain citizens' use of online services, 61% (Table 7.9) of interviewees recognised that some level of training, up-skilling or shift in thinking was needed on the part of council staff in order to realise the potential of online interaction with citizens:

*“[I]t is a different environment, the sorts of things we do online. [It] should be big, in the sense you have to go through multiple channels, so you can choose as a customer. That means staff would be have to be able to cover web, phone, walk-ins, letter.”* (Ref: 11-05)

*“I think the more online technology we use the more the frontline staff need to be aware of it and educated to use it to its full potential. There is definitely increased demand on them as a result of e-government.”* (Ref: 11-20)

In contrast, 16% of interviewees were of the opinion that there would be considerable overlap between the old and new skill sets required for cost-effective customer service in an online environment, possibly because citizens would be utilising much of the online information and services themselves:

*“I don't think so. One of the benefits that we would get out of this is a reduced requirement for front-line staff because we would hopefully satisfy more requests with a self-help approach ... From that perspective, I don't think they [staff] need to up-skill. I suspect their job could be more interesting.”* (Ref: 11-20)

*“I don't think so. Because if we do it right it should be intuitive. So the customers should be able to do it without any interaction at all. We could possibly get some calls saying I'm stuck trying to do such and such could you possibly help me out.”* (Ref: 11-41)

### 7.1.9 Organisation size

The impact of organisational size on e-government implementation is demonstrated by the figures shown in Table 7.10. Some 65% of interviewees viewed the size of their organisation as influencing the adoption and implementation of e-government by their councils. In particular, size was considered to be a determining factor in the quantity and quality of resources available when implementing any change in strategy.

Organisation size	To what extent has your organisation's size influenced its adoption and implementation of e-government? (N=43)	Frequency	% of total
	Influence	28	65.1
	No influence	11	25.6
	Unsure/no answer	4	9.3

Table 7.10: Influence of organisation size on e-government

Smaller councils tended to report that the progress of their e-government implementation was impacted negatively mainly due to a lack of financial and human resources. They highlighted that the cost and risk of e-government development was proportionally higher for the smaller council. The following extracts illustrate the perceived impact of council size on e-government implementation:

*“Simply being a small council, we don’t have nearly as much money to play with ... Larger councils can afford full communication teams, things like that, that are closely tied in with the Internet and the web these days, and we simply don’t have those resources”* (Ref: 12-04)

*“[I]f we have had more resources and more money we could have done it sooner. It’s just slower.”* (Ref: 12-07)

*“I think a bigger organisation would be able to adopt a new approach like e-government more easily.”* (Ref: 12-29)

*“[W]e have a smaller number of ratepayers so we have lower income and we have a smaller number of staff. When you add that all up it’s definitely harder for smaller councils if you think about it.”* (Ref: 12-41)

In order to lower the organisational size barrier, some councils reported pooling resources, in terms of knowledge, expertise and experience. These shared services offered the possibility of sourcing external resources or negotiating a cheaper rate for products and services. For smaller councils, some of their e-government initiatives were implemented using shared services that would have been impossible to achieve working alone:

*“We don’t have to do everything ourselves. We can share business analyst time, we can try and get a good deal with ERP vendor for software licensing because we have joint purchasing [power] ... That’s one way of overcoming our size, is to join forces with another councils.” (Ref: 12-07)*

Interestingly, interviewee from the comparatively larger councils suggested that a smaller organisational size might increase flexibility, efficiency and the gains available from even a modest e-government implementation. For example, interviewees noted that staff of smaller councils could be more digitally aware, and that smaller councils could be more efficient than larger councils and able to deliver online services faster due to a lower number of customers:

*“I think the smaller council I worked with was more digitally aware and more capable of going into e-government than this [large] council does ... [In] this organisation ... it seems that this is five times more expensive and will necessarily [need to] provide five times more better returns as well.” (Ref: 12-11)*

*“The rationale for that is you’ve probably have not got as many resources in terms of your normal channel – that’s a problem for you. How many customers do you have over the counter, how many staff have you got? When you go online, you can probably meet requests more quicker rather than large councils like us, who have to continue to do all those multiple channels.” (Ref: 12-05)*

Another interviewee, from a mid-sized council, noted that although bigger councils had more resources, they faced other challenges, related to size, such as increased scale and complexity, which smaller councils did not:

*“I think size does have some influence. I see it both ways, larger organisation may well have a lot of resources, but their challenges are much bigger, and a small council may just be able to find a little bit of resources and that may be enough.” (Ref: 12-21)*

While some mid-sized council interviewees reported that either a lack of resources or the incorrect allocation of those resources could delay cost-effective implementation of e-government, others suggested that their council size was optimal for achieving the level of e-government they needed:

*“It is a constraint yeah. Yes, it doesn’t sort of make it any less important. I think the importance is still very much there but their ability to provide the same level of e-government services is lower”. (Ref: 12-10)*

*“We are big enough to have enough resources to cope with the demand we have got exactly. Midsizex is a kind of balance.” (Ref: 12-22)*

*“We sort of classify ourselves as being in the middle. We are not a massive council staff-wise, but we are big enough to do things relatively well.” (Ref: 12-31)*

### 7.1.10 External pressure

In regards to the influence various stakeholders have on e-government implementation, data collected through interviews was collated, coded and summarised as shown in Table 7.11.

External pressure	To what extent has pressure from external stakeholders (e.g. central government, other local authorities, citizens, business) influenced e-government implementation in your organisation? (N=43)	Frequency	% of total
	Influence	22	51.2
	No influence	14	32.6
	Unsure/no answer	7	16.3
	To what extent has a perceived need for comparative advantage or desire for leadership in e-government influenced e-government implementation in your organisation? (N=43)		
	Influence	14	32.6
	No influence	21	48.8
	Unsure/no answer	8	18.7

Table 7.11: Influence of external pressure on e-government implementation

These figures indicate that just over half (51%) of the interviewees perceived that external stakeholders exerted pressure on the development and implementation of e-government by local councils. The most commonly mentioned example was the mimetic pressure exerted by monitoring the progress of e-government development in other councils or through involvement in shared services initiatives:

*“[W]e looked to some of the larger councils and some of our neighbours to see what they were doing, and as it made sense we tried and accepted solutions that they’ve got, rather than invent our own.” (Ref: 13-03)*

*“We are looking at other organisation and sort of benchmarking what others are doing.” (Ref: 13-13)*

*The influence coming from other local authorities really has had to do with sharing ... The difficulty with any, with local government, is that once you get into shared services what you find is that you tend to sponsor the smaller councils and gain from the larger ones.” (Ref: 13-28)*

Best practice and trends in local e-government were made visible to councils via case studies, survey reports and other forms of information sharing from local government organisations such as ALGIM, the New Zealand Society of Local Government Managers (SOLGM), and Local Government New Zealand (LGNZ), which represents the interests of local councils nationally and holds an annual local government conference:

*“We are a member of ALGIM who do surveys for instance on e- government throughout New Zealand ... so we do have reports that allow us to engage with what our fellow councils are doing. And so we believe that at this point of time we need to increase what we are doing around e government to really keep up with other councils with in New Zealand and other councils within even in the region.” (Ref: 13-16)*

*“[W]e have a local government web forum, once a year where we all get together where we compare and have rankings and discuss latest trends and that sort of things and that has definitely influenced the work we have done on the website in the past for years.” (Ref: 13-20)*

For other councils, the requests of local major businesses, Chambers of Commerce and other business or community organisations exerted an influence on e-government implementation:

*“I will give you an example. Today we were contacted by a large business, a large employer, saying that they cannot get good [broadband] connectivity and that’s it’s getting worse and worse, and what can we do to help?” (Ref: 13-33)*

*“The Chamber of Commerce were keen to make sure that digital uptake is not only in business, but residential at the same time too.” (Ref: 13-05)*

Finally, a number of interviewees referred to the necessary contact between their councils and various government departments and agencies, usually based around information sharing:

*“We also share information with other governmental departments like the Ministry of Justice ... Land Information New Zealand.” (Ref: 13-01)*

*“We definitely are talking to a lot of central government agencies, including Department of Internal Affairs, Department of Building and Housing, and so on.” (Ref: 13-09)*

In contrast, nearly one-third (33%) of councils believed that there was no significant pressures exerted on e-government implementation from external stakeholders. In a number of cases, this seemed to be because either a council was not ready or able to move towards e-government or perceived that e-government implementation was at a very early stage in New Zealand:

*“We don’t have e-government implementation. So we probably don’t have any influences at the moment so.” (Ref: 13-20)*

*“There is only probably one or two that have done something significant [in local e-government]. There is no evidence to suggest that they get used quite heavily at the moment.” (Ref: 13-25)*

The influence of a need for comparative advantage or a desire for leadership in e-government implementation was perceived to be negligible or not influential for almost half (49%) of local councils in New Zealand (Table 7.11). Many of these councils deliberately adopted a follower, rather than a leader, position because they believed that it was easier to follow or learn from other councils (or their vendors) who had already implemented a service, preferred to focus on delivering services that would be beneficial for the ratepayer, or lacked the financial resources to become a leader in e-government development. The following extracts demonstrate these:

*“Not really. We don’t want to be the leader of the pack. Our technology adoption position tend[s] to be a late adopter. We are certainly not interested in being at the leading edge. And we’d rather learn from someone else who has done it.”* (Ref: 14-07)

*“No, I don’t think so. It’s not a race for me. Some are probably motivated by that. What I am more interested in is making sure that we deliver what is beneficial to the community or rate payer.”* (Ref: 14-12)

*“[I]t is a small council so we do not have the money that other councils do and other councils have a lot more online applications now. So we are probably a follower rather than a leader.”* (Ref: 01-32)

However, some interviewees suggested that while a need for comparative advantage was not prevalent because there was not competition in e-government services between councils, perceived council performance might be a driver:

*“It doesn’t really exist because it is all monopoly. If you want to register your dog, you can’t take it to the next authority, you have to come to this authority. I am saying there is no competitive advantage. What there is, is a benchmark satisfaction between all the councils ... in terms of services provided by the local authority. So, that’s the only real driver.”* (Ref: 14-01)

Indeed, nearly one-third (33%) of interviewees perceived that a need for comparative advantage or a desire for leadership did have an influence on their councils’ e-government implementations. Many of these interviewees suggested that a desire for leadership in the e-government space from senior management or the political leadership was driving e-government development. Alternatively, a culture of excellence could act in a similar way. Other interviewees were of the opinion that advancing e-government implementation would make their leadership team happy, which in turn would provide more financial support:

*“Yes, definitely. Senior management is very keen to see our city council as a front runner and leader in this field.”* (Ref: 14-14)

*“It probably does from our leadership, in central government. Again, in that forum that I mentioned, part of it is that they rank all the local government websites, and over the past 4 years we have moved up from the 80’s to within the 20’s.” (Ref: 14-20)*

*“Desire for leadership has influenced ... It comes back to the culture of your work place and wanting to be the best ... We think we are pretty good and we want to prove it and yes we do take a lot of pride in what we do.” (Ref: 14-28)*

*“I think there is an advantage because it would benefit the politicians, because they like good leading stories. Leading position reflects good on them therefore you get more financial support.” (Ref: 14-23)*

One interviewee suggested that comparative advantage through implementing e-government services would enable the council to move closer to its ratepayers or help motivate businesses or citizens to relocate to their council area:

*“I think it does, and how we’ve tied to our long term plan, ticking out part of the council vision, which is making [council] close to people who chose to live. You have to say “yes” to that. It’s all about getting people to relocate here, business to relocate, visitors to enjoy the experience of being here so they come back. It is comparative advantage.” (Ref: 14-21)*

### 7.1.11 Legal issues

In regard to availability of an adequate legal and regulatory framework that can facilitate a smooth transition to e-government implementation, the figures in Table 7.12 show that over three-quarters (77%) of the interviewees did not answer the question or were unsure of how this influenced their councils’ e-government implementations. One possible reason could be that the question required an in-depth understanding of the legal and/or regulatory aspects of council business, which many interviewees may not have had.

Legal issues	Is there an adequate legal and regulatory framework in place to facilitate e-government implementation? (N=43)	Frequency	% of total
	Yes	7	16.3
	No	3	7.0
	Unsure/no answer	33	76.7
	Are there specific legal or regulatory issues that hinder e-government implementation? (N=43)		No
	Yes	17	39.5
	No	17	39.5
	Unsure/no answer	9	20.9

Table 7.12: Legal and regulatory issues in e-government implementation

Of the 10 interviewees who could answer this question, 7 (16%) believed that an adequate and well-defined legal and regulatory framework existed within which local e-government could be implemented.

*“Yeah, I think there are, and I don’t think people are aware of some of those. And that’s why I think the central government sort of policies are important to set the ground rules for us. Things like e-government security and things like that.”* (Ref: 15-03)

*“So, in the local government space, it’s very clear about how we are to facilitate e-government from a legislative perspective.”* (Ref: 15-40)

Interestingly, one interviewee pointed out that the legislation governing access to information held by public sector bodies needed to be updated to take into account information contained in new media such as the Web:

*“Things like LOGOIMA [the Local Government Official Information and Meetings Act 1987] ... need to be updated to take into account for the Web. We publish a lot of information on our website ... Its whether or not you’re publishing information or simply making it available via a search. It has a different connotation.”* (Ref: 15-35)

Indeed, the interviewees were more forthcoming with regard to whether specific legal or regulatory issues hindered e-government implementation or not. Some 40% of the interviewees were of the opinion that various legislative and regulatory requirements, including those of the Electronic Transactions Act 2002, the Privacy Act 1993 and the Public Records Act 2005, together with the law concerning copyright, information privacy and digital signatures in New Zealand, would hinder (although not necessarily prevent) e-government implementation. The following quotes highlight some of these perceived hindrances:

*“Yes issues to do with identification where people have to do manual signatures that now is a problem and identifying people in order to issue them with things like liquor licenses and the legal aspects around that using online services is a challenge.”* (Ref: 16-14)

*“[T]he copyright law makes it a little bit complicated, that’s one very new thing as a problem.”* (Ref: 16-21)

*“Obviously there are specific legal issues as to how you implement payments, in particular, and also the protection of information as well ... So, we are you know governed by a number of different legislative requirements. And all of those are restricted but they don’t make e-government impossible.”* (Ref: 16-40)

On the other hand, an equal proportion (40%) of interviewees perceived that the various legislative and regulatory requirements under which local councils operated were not a hindrance to e-government implementation in their councils, often because these were well-established and there was a clear standard to be adopted by all councils:

*“They are relatively minor ... No, I don’t really see there being too many legislative barriers.”*

(Ref: 16-07)

*“Not really. I mean, I guess there could be in future issue if central government decides to centralize some services, then there could be, but I don’t think so. I mean obviously there are things that we still need to cover off, tend to deal with that okay.”* (Ref: 16-25)

*“I think there are standards ones that most organisations have had to address with any kind of thing online a lot of it is around privacy and security and those sorts of things.”* (Ref: 16-28)

### 7.1.12 Digital divide

Any citizen adoption of online interactions with their local council will be strongly influenced by the so-called ‘digital divide’; i.e. disparity between groups, in terms of access to, use of, or knowledge of ICT. Interview data from this question were coded into three main levels of influence on local e-government from a digital divide (Table 7.13). Often interviewees would cite estimates or percentages of Internet access within their council areas.

Digital divide	To what extent has digital divide (Internet access, broadband access, income, education, age, or language) influence in citizen e-government participation? (N=43)	Frequency	% of total
	High impact (<60% had access)	13	30.2
	Moderate impact (60-70% had access)	9	20.9
	Low impact (>70% had access)	9	20.9
	Unsure/no answer	12	27.9

Table 7.13: Influence of digital divide on e-government implementation

The figures in Table 7.13 show that 30% of councils appear to have relatively low (<60%) citizen access to e-government initiatives. These were mostly district councils either covering large rural areas or smaller in size (except one was a city council). The impact of digital divide on these councils’ e-government implementations was categorised as *high*. Another 21% of councils reported that 30-40% of their residents lacked digital access and as such the impact of the digital divide on these councils was categorised as *moderate*. Among these there were four city councils and the rest were district councils with a high population or having lesser rural areas to cover. A variety of reasons for a digital divide

were given, including poor broadband coverage, especially in rural areas, a lack of technical competency by citizens, and some households being unable to access the necessary technology because of financial constraints:

*"I think there's still a skill difference that makes people prefer to come into the building and talk to someone face to face.... they are not necessarily equipped to, their skills of using the Internet access."* (Ref: 17-01)

*"[W]e have still got not a lot of uptake of Internet usage, broadband connections. Yes, we do have challenges around that, yes, definitely. Yup, the uptakes are not great. The numbers, I think, are around 60% of people don't have broadband or something."* (Ref: 17-06)

*"What I have said about 10% having Internet at home you'd be surprised how many people have Internet on their cell phone and don't realise it. That's a challenge for some of our citizens."* (Ref: 17-11)

*"It is a low socio-economic [area] and I think quite a lot of people don't have a computer or don't have Internet access at home. That I think will be a significant impediment to e-government. I'd think it could be around 50%."* (Ref: 17-18)

Only 21% of councils estimated that over 70% of their residents had the wherewithal and understanding that would facilitate high citizen participation in the online environment. These tended to be major cities or relatively affluent tourist destinations in New Zealand. Any digital divide impact on these councils was categorised as *low*:

*"In fact my understanding is that nearly 80% of the community has access themselves anyway unless that statistic includes access through library, and a large number of those are elderly folks as well as the younger ones."* (Ref: 17-02)

*"Well, we're kind of lucky that most of our area with services is fairly urban. So, access to technology and stuff is quite high. We have about 85% of people in our region have Internet access, and about 70% are having broadband because they are living in the urban area."* (Ref: 17-25)

*"Most of our ratepayers are non-resident and they tend to be wealthy and well educated ... We are pretty wired up and the rural broadband initiative will guarantee high speed availability to 86% of the population."* (Ref: 17-35)

### **7.1.13 Security and privacy**

#### **Information security**

With increasing public awareness of the importance of information security in the digital age, it is not surprisingly that 79% of the interviewees saw this issue as critical in developing and implementing e-government initiatives (Table 7.14). These councils viewed securing personal and private information over the Internet and building citizens' trust for

online transactions as critical and potentially risky, requiring compliance with established standards. Moreover, legislation also requires rigorous security protocols around the collection and storage of large amounts of sensitive data. Some interviewees discussed access security or the need to maintain data integrity. The following quotes illustrate the importance councils place on information security:

*“It’s always been an issue for us and we have to be really careful with it. About what information can be released and what can’t, for example, going through the GIS [geographic information system] system.” (Ref: 18-02)*

*“It’s quite critical and once again we have experts that we rely on in terms that the provision is secure so customers will be able to safely interact with our services. We are still working on a security framework at the moment.” (Ref: 18-09)*

*“It does introduce another level of security that we have got to be aware of, in that we are ensuring that the integrity of the data that’s coming through the online service isn’t compromised in any way or that we place our systems in any form of risk.” (Ref: 18-15)*

*“Quite significantly. I mean the website has to remain secure as far as the bigger picture of information security goes - it’s just another piece of the puzzle for security.” (Ref: 18-30)*

*“It’s paramount, top priority. Obviously security and privacy of information that we hold, also with regard to PCI [Payment Card Industry Data Security Standard] compliance, ensuring that any information that we do hold is in a secure ... format.” (Ref: 18-43)*

Security and privacy	To what extent is information security an issue in e-government implementation in your organisation? (N=43)	Frequency	% of total
	Important	34	79.1
	Not important	4	9.3
	Unsure/no answer	5	11.6
	Does your organisation have a privacy policy that covers electronic information about citizens? (N=43)		
	Yes	35	81.4
	No	5	11.6
	Unsure/no answer	3	7.0

Table 7.14: Information security and privacy in e-government implementation

One interviewee was concerned about the need to research the compliance of the products and services that councils procure with the relevant security standards:

*“Again there is no research I mean to me it’s just the purchase of the product or a service, there are some rules around security issues that might cause some difficulty.” (Ref: 01-02)*

Only 4 interviewees (12%) reported that information security was not a major issue in their councils’ e-government implementations, mainly because those councils were at low level

of maturity in the e-government space; for example, a web presence with only limited provision of information:

*“No, from our perspective very little. Not at this stage. It may very well be when we look at what information we might make available to our stakeholders. Obviously, some information we don’t want to make available [online], and obviously we would develop a policy around security at the time that we are starting to distribute that information.”* (Ref: 18-13)

## **Privacy**

Table 7.14 shows that 81% of councils were reported as having a privacy policy that applied to the collection and storage of sensitive information about their citizens in a digital form. None of the councils were reported as creating a privacy policy specifically for electronic information, although some suggested that could change in the future. Instead councils followed the existing relevant privacy legislation such as the Privacy Act and the Local Government Official Information and Meetings Act (LOGOIMA), treating electronic information the same as information other in other media. Most councils publish their privacy policy on their website. The following quotes highlight the privacy policies followed by councils with regard to electronic information:

*“We do not have an explicit privacy policy but we are covered by the Privacy Act and its subsequent amendments. We do state on our website that we do not collect information about you or anything that may identify you during your visit on the website.”* (Ref: 19-04)

*“We have broad statement policies which talk about the reinforced Privacy Act but they are not specific about electronic information at this stage. We may review that.”* (Ref: 19-07)

*“We don’t treat electronic information different than any other information. In that context we have got some policies but they are more about privacy and they are more about taking in the facts and those sorts of things.”* (Ref: 19-11)

*“Our privacy policy is driven by the Privacy Act and LOGOIMA. So we do as much as we can under these existing regulations.”* (Ref: 19-35)

One interviewee reported that while a document “*per se*” was not private, the information it contained may be. When releasing such information electronically, the council was required to redact those private portions of the document. However, it was understood from the interview data that what constituted private and public information was clearly defined in legislation:

*“A lot of the information held in councils seem to be public and can be requested and yet there are certain aspects of the information that deal with personal interactions with members of the*

*community which is held private. So there is quite clear demarcation, regarding what is considered a public record and what is not.” (Ref: 19-28)*

Disturbingly, 5 councils (12%) were reported as not having a privacy policy that covered electronic information about citizens. These interviewees appeared to be unfamiliar with the Privacy Act and LOGOIMA, which together with other relevant legislation provide the statutory framework for councils to follow when considering information privacy, including digital information.

#### 7.1.14 Infrastructure

Two crucial elements needed by local councils to advance the e-government model are network infrastructure and availability of bandwidth. To gauge the present state of these factors and any future capabilities, councils were queried on this subject. The answers to these questions were coded, summarised and are shown in Table 7.15.

Infrastructure	Are your organisation’s network infrastructure, speed and reliability sufficient to support current and future e-government needs? (N=43)	Frequency	% of total
	Sufficient	34	79.1
	Insufficient	3	7.0
	Unsure/no answer	6	14.0
	Is the availability of broadband within your organisation’s area an issue in e-government implementation? (N=43)		
	Yes	28	65.1
	No	10	23.2
	Unsure/no answer	5	11.6

**Table 7.15: Infrastructure influence on e-government implementation**

The data shows that the majority (79%) of interviewees perceived that their councils’ network infrastructure, speed and reliability were either adequate or would be up to the task of providing for expansion as and when needed. Although the network bandwidth within the council’s office buildings and areas close-by was reported as satisfactory, major parts of some council areas, mostly rural, remained poorly served with bandwidth and viewed this fact as a potentially major bottleneck for e-government implementation and progress. However, these councils expected that the implementation of the rural broadband initiative sponsored by central government would resolve the bandwidth issue in the future:

*“Our internal infrastructure is really good but being a rural [area] the actual external infrastructure giving us quick connectivity to the Internet as a general[isation] is not really that mature in our region. We are hoping that we will see some improvements with the rural broadband initiative that the government has announced in the recent months.” (Ref: 20-16)*

Some local councils were reviewing the adequacy of their network infrastructure or were undertaking various initiatives to enhance infrastructure capability, including moving onto a virtualised platform for improving development and testing capacity, using a cloud computing environment to complement existing computing resources and developing plans for replacing hardware every four years to take the advantage of technological development:

*“We will review them. At the moment they are sufficient to meet current requirements but not the future requirements that we are anticipating.”* (Ref: 20-20)

*“We moved to a virtualised platform for all our services internally and that given us a huge platform for future development and testing, and the environment that we never had before. We have the capacity to do a lot more ... So, infrastructure is not a blocker at all.”* (Ref: 20-22)

On the other hand, several councils found hosting their website through external servers or outsourced infrastructure went some way towards solving the lack of bandwidth issue:

*“So we basically outsource our infrastructure. So basically, infrastructure is provided as a service to us by a vendor and we have a SLA [service level agreement] with the vendors’ performance.”*  
(Ref: 20-09)

However, 65% of interviewees considered the level of broadband availability within their councils’ catchments would be a major impediment to e-government implementation, particularly because it restricts their ratepayers, residents, political leaders and business partners from accessing online information and services. This was particularly noted in large, dominantly rural catchments. One of the interviewees reported anecdotally that one resident from a remote location needed over seven hours of driving to take care of five to ten minutes business at the local council offices in the absence of broadband. A number of interviewees perceived uptake of broadband to not only be dependent on availability of bandwidth but also on cost. Several interviewees expressed the opinion that an improvement in broadband availability would greatly improve outcomes for planned e-government services. The following quotes illustrate these points:

*“It is an impediment if you don’t have a reliable and large capacity of Internet connection.”* (Ref: 21-01)

*“Yeab, our current broadband services are a limitation for us. That’s partly a cost thing, and partly a delivery thing. If we, we could spend a little bit more money, then we could do better.”*  
(Ref: 21-03)

*“And being rural we have that problem with slow speeds as soon you get out of the towns. Anything we do online, we try to make sure that it’s not going to overwhelm people and slow connections.”* (Ref: 21-04)

*“We are still on the old broadband and we still pay lot of money for our Internet ... The new high-speed broadband is coming within a year but we are waiting and that will be very useful. Quality of the services can be improved.”* (Ref: 21-22)

Some 23% of the interviewees viewed the availability of broadband as having limited or no impact on the implementation of e-government, usually because either their council areas had good broadband coverage or only a small part of their community would be impacted:

*“No, it doesn’t no because we are primarily a urban community. The broadband aspect doesn’t really affect us the same. There are a number of rural consumers but most of them are within the broadband area provided by the current service.”* (Ref: 21-15)

*“I don’t think so, there are area’s in our outlying, rural areas where broadband is not available, but I think again you are dealing with a pretty small subset of the community.”* (Ref: 21-28)

#### **7.1.15 Data and information**

The impact of availability, integrity and quality of data and information on local e-government implementation is presented in Table 7.16. The information in this table shows two-thirds (67%) of interviewees considered that the data quality and integrity was extremely important for their councils’ e-government implementations. The accuracy of this data would determine whether or not a particular service could be implemented online. Bad data could potentially mislead citizens, damage council reputation and impact on the council’s relationship with its citizens. The following quotes highlight the importance of data quality and integrity from council perspectives:

*“A lot of the issues that were raised were on the quality of data. And also the quality of data is going to determine what information we are going to be able to distribute through any enablement platform.”* (Ref: 22-13)

*“People surfing the Internet automatically assume that the data information is correct, but if it’s not, then that could be a big problem.”* (Ref: 22-25)

*“[Data] integrity is the key, it’s critical, if you don’t have accurate data that you are giving out to a citizen might affect their relationship with council.”* (Ref: 22-28)

Data and information	Is e-government implementation in your organisation affected by issues related to data or information availability, appropriateness or quality? (N=43)	Frequency	% of total
	Yes	29	67.4
	No	11	25.6
	Unsure	3	7.0

Table 7.16: Influence of data and information on e-government implementation

One of the major challenges perceived for e-government implementation was the amalgamation of ratepayer information held on several disparate databases throughout the departments of each council. Errors in data collection such as spelling mistakes and operator mis-keys in entry of that data could add up to a time-consuming and costly job to rectify. A council manager reported that they had two contact records for say, dog-owning ratepayers: one had rate information and the other had dog information. In the online environment this duplication had created confusion. Another interviewee reported that the implementation of their online payment systems was stopped due to a data integrity issue. In order to improve the quality and integrity of data, councils had initiated various projects and programmes in the name of *master data management* or *data cleansing* or *data quality*. Further, larger councils reported having established a system that allowed measurement of data quality by means of investigation and analysis. One interviewee suggested that a data quality issue would be difficult for smaller council to resolve, since it requires time and money. The extracts below illustrate some of these points:

*“[W]e have a concept called single view i.e. to generate a single view of the customer or a single view of a complaint. So data cleansing really assists organisation. It’s about the perspective. It’s not quite the same data, it might be the same person but with different spelling or different information.”* (Ref: 22-23)

*“We have some programs in terms of master data management and all that. That should address some of that. It’s a long program, like I said and we have a fair bit of work to do in that space.”* (Ref: 22-09)

*“Actually, it’s probably one of those questions we have to go under constant review and resolve as we move forward with our strategy. So, we [move] forward with a project that’s looking at duplications of names within our database and quality of addresses and things of that nature.”* (Ref: 22-11)

*“[W]e can measure the data quality that we’ve established in a few areas, and the smaller you are as a council the harder it becomes to solve those issues.”* (Ref: 22-05)

Besides data quality and integrity, some interviewees perceived that data availability was another major challenge for e-government implementation. For example, historic data was

not available in a digital format, or data needed to be extracted from differently indexed data sets that a council had received from the amalgamation of four councils:

*“[H]istorical data is not digitized currently. We’ve got records that go right back to the flood. So that’s not digitized. So how does that come out into the community.”* (Ref: 22-19)

*“[W]e came from four different councils. Those four councils index data differently.”* (Ref: 01-12)

Just over one-quarter (26%) of the interviewees perceived that the availability, quality and integrity of data would not be an issue for their councils’ e-government implementations. According to them, online services would be provided by sourcing data from existing databases and systems. Some councils reportedly had reliable and good quality data. Other council noted that they are obliged to provide certain information regardless of its quality, which might be out of their control. One interviewee stated that the council would place a disclaimer on its website stating that information available through their portal might be incorrect, so as to tackle this issue. The following quotes illustrate these points:

*“I think most of the information that we will probably put onto the online services as part of our website will integrate into our existing system. I don’t think the availability of the information is going to be too much of a problem.”* (Ref: 22-07)

*“We don’t have any issues with data cleansing or quality or reliability of information and that doesn’t become a problem at all. Because when we provide these services online it’s well-designed upfront and it’s documented and developed professionally. We are testing the extracts and that sort of thing.”* (Ref: 22-14)

*“The reality is that we will have a disclaimer that will say something online, we might be sent some information that might be incorrect, and create a disclaimer that we can’t guarantee it, you know. And we have dependence on other agencies for some of that data.”* (Ref: 22-16)

*“The obligation of local government is to supply the information that we have. The quality of information doesn’t have any guarantee behind it, so the quality of that information is not really an issue.”* (Ref: 22-01)

#### **7.1.16 Interoperability**

Table 7.17 shows that 47% of interviewees believed that their councils’ systems would be inter-operable with other external systems, i.e. that they would be able to exchange information over a heterogeneous network in a meaningful and useful manner. In some cases, this belief came from the fact that they had followed a central government data standards initiative. In addition, some councils were in the process of implementing a layer over the top of all their disparate computer systems using service-oriented architectures that would enable them to be interoperable. Outdated legacy systems would be retired. The

following quotes illustrate why interoperability was not an issue for nearly half of the councils interviewed:

*“Data standards should be able to overcome most of those things.” (Ref: 23-12)*

*“Compatibility, not an issue because it is a tried and tested system that we are implementing and is in use in a number of authorities throughout Australasia. No issue, because it’s all going into the one system. We already have a corporate system in place and as I said to you before the e-government functions within that system that’s been designed. And there is another platform if you like sitting over on top of our corporate system. It provides a gateway direct into that system. The compatibility is definitely not an issue.” (Ref: 23-15)*

*“[W]e are implementing service-oriented architectures in the market, effectively putting a layer over top of all that computer systems, which makes us interoperable.” (Ref: 23-41)*

Interoperability	Is the compatibility of technological and organisational systems (both within your organisation and with other agencies) an issue in e-government implementation? (N=43)	Frequency	% of total
	Yes	18	41.9
	No	20	46.5
	Unsure/no answer	5	11.6
	Are adequate standards for interoperability in e-government available? (N=43)		
	Available	15	34.9
	Not available	13	30.2
Unsure/no answer	15	34.9	

Table 7.17: Influence of interoperability on e-government

However, another 42% of interviewees perceived that inter-operability between internal and external systems was an issue for e-government implementation in their councils, mainly because those councils had either too many systems, too many software packages, or software that was not up-to-date. Central government strategy in relation to e-government added uncertainty to issues around system compatibility. Interestingly, one council had installed a software package for online services from Australia that did not meet New Zealand standards. This contrasts with the statement given above (Ref: 23-15), where an interviewee indicated that they had resolved the compatibility issue by installing a product used throughout Australasia. The following extracts highlight some of these points:

*Yes, because of the range of systems we run and also in terms of other local government initiatives and shared services there’s a lot of disparity of systems internally and externally. Definitely has an impact, ability to deliver.” (Ref: 23-14)*

*“Ya and also there’s a lot of variability that has been caused by the central government where we are not sure we would be doing something in the next few years. So why would we spend 50 , 80*

*thousand dollars trying to do something which central government could turn around and say thanks but we are doing all that now and here's the end of it? It doesn't make sense. I mean there are a lot of strategies, a lot of variables, uncertainty.” (Ref: 23-17)*

*“We have a new system that is supposed to be e-services compatible, e-government compatible, but it's an Australian product so it doesn't meet New Zealand requirements. That has been a significant issue for us.” (Ref: 23-20)*

With regard to the availability of adequate interoperability standards for e-government implementation, the figures in Table 7.17 show that about 35% of council interviewees acknowledged that they knew of the existence of inter-operability standards for e-government initiatives, although none of stated that their councils were using them. Instead, several interviewees claimed that the standards had not been updated for over two years, and that progress in adopting them had stalled. One interviewee was of the opinion that the inter-operability standards had become useless because of the lack of development and mandatory application in government organisations:

*“[T]he standard do exist they are not being applied to local government.” (Ref: 24-01)*

*“There are standards which still there, we can access and use it but they are not, I don't think they are maintained.” (Ref: 24-05)*

*“[Interoperability standards] weren't being utilised and they weren't being enforced so they became useless, because for instance the DLA [Department of Internal Affairs] would develop seeds for interchange standards, and other central organisation would go that's great, but we are not going to use it.” (Ref: 24-39)*

Of the remaining interviewees, 30% stated that there were not inter-operability standards available for e-government implementation. In some cases, these interviewees were reflecting the lack of progress on standards development referred to above. Some councils were reportedly using or developing their own standards on a case by case basis.

However, a significant proportion (35%) of interviewees were unable to answer the question or were unsure of the availability a framework for interoperability. In some cases this was because they perceived that too many standards were available and that this had caused confusion.

#### **7.1.17 Additional comments on local e-government**

At the end of each interview, interviewees were given the opportunity to make further comments on any additional issues that they perceived were important for e-government

implementation. These responses were coded and either used in a prior relevant section, or grouped into the four themes discussed below.

*Central government initiative:* Several interviewees were of the opinion that central government should take a stronger lead in providing guidelines that would standardise council websites. It was suggested that since local councils all provide similar services, a functional interface could be established for citizens so that the provision of online services would be consistent across the country. Australia was given as an example of country provides local e-government services in a consistent way across the country. Further, central government should communicate their initiatives or standards to local councils before pushing for implementation. It was perceived that several central government initiatives remained unsuccessful due to a lack of communication to local councils. In addition, central government's initiatives should include provision for affordable, fast broadband for councils, making the provision of on-line services feasible no matter the size of the council. This in turn would create a competitive pressure within local councils to enhance the delivery of services, which is perceived to be lagging behind other government organisations. The following quotes highlight these points:

*"Because we would do the same thing, generally we do the same things, why wouldn't we have the same interface?"* (Ref: 25-17)

*"[W]ith e-government, you really need strong leadership, and countries overseas like Australia, they've taken a much more stronger leadership position. For instance, all their states and local authorities use the same standards, web development, ... or high profiled software ... [A]ll those things are solved at a central level and rolled out ... So doesn't matter which part of Australia you move to, you expect that local government provider to provide a service consistent with the previous one."* (Ref: 25-05)

*"No, it's kind of a shame that we're a little bit behind some countries, it's certainly behind a lot of industries. And maybe it's because local government is I guess moving a little bit slower than other governments. But at the end of the day, we're still a monopoly. So the competitive pressure isn't there."* (Ref: 25-25)

*Online customer service:* One of the council managers suggested that providing online customer service using a Voice Over Internet Protocol (VOIP) service such as Skype or similar could assist customers conducting business online at any time. Moreover, this would benefit those who prefer face-to-face contact or the personal touch of the service provider:

*“So, if our customer wants to deal in person they should be able to do so. That means if you are an old customer you might be able to contact through Skype or other tool of that nature. So that's another area we haven't really thought of yet but we should be so we might be able to do service with customer service operator on Skype.” (Ref: 25-11)*

*Online payment:* Currently, councils charge an extra 2-3% for online payment using credit card to cover the cost paid to the credit card companies. This was one of the major reasons ratepayers cited for not using an online payment option. To overcome this issue, one of the interviewees suggested allowing payment by Eftpos (direct debit) card, where there were no extra fees required to be charged and noted that such a service was available in other countries:

*“[I]f you pay rates by credit cards there is the two and a half per cent or whatever the merchant fee is that someone has to pay. And which is a barrier for making large payments. I think in other countries you can pay with your Eftpos card.” (Ref: 25-07)*

*Wireless services:* One interviewee suggested that use of a SMS (Short Messaging Service) channel could enhance the access to and delivery of local government services to citizens, business partners, and government institutions:

*“The relevance with wireless services in the wider world area is going to improve. I am thinking cell phone type functionality and certainly the technology looks like it's about to really break into that area where not only will be able to communicate through our web but the wireless services such as SMS messaging to poorly served rural microwave cell phone areas.” (Ref: 25-33)*

## **7.2 Summary**

Overall, the current level of e-government implementation in New Zealand local councils as reported by the interviewees is typically low to moderate. That is, the majority of councils share online information with their citizens and offer a variable level of online interaction and no or limited online transaction capability. The majority of local councils do not have a formal e-government strategy in place, instead developing their approach to e-government in an ad hoc fashion, giving it relatively low priority or adopting a ‘wait and see’ approach. Local councils tend to use the New Zealand’s e-government strategy as a guideline (Ref: 2a-20 and Ref: 2a-04), aligning their e-government strategy or approach in areas where it suits them, mainly because the government strategy is not mandatory for them to follow. The majority of local councils have considered or intend considering citizens’ needs and perspectives in their approach to e-government strategy. However, fewer than half of the councils reported incorporating some form of (limited) citizen online participation or e-democracy. While a number of councils reported having more than one

main goal or objective for e-government, empowering citizens and enhancing customer service were the most frequently reported. Almost three-quarters of the councils reported that their e-government goals and objectives are aligned with other organisational goals. Councils identified several barriers that had influenced the progress of their e-government development and implementation, including the need to charge transaction fees for credit card payments, difficulties in integrating complex business processes, a lack of awareness of the benefits and issues within the council organisational structure, a lack of knowledge of citizen e-government requirements, issues associated with a rural or geographically dispersed constituency, and the lack of a mandatory central government policy on local e-government. External collaboration with government agencies and inter-departmental collaboration within local councils were both perceived to be important for e-government implementation by a majority of interviewees. Overall, collaboration between the functional units of a council was perceived as more important than external collaboration in an online environment. While councils could function in the e-government space with limited or no external collaboration, the online delivery of council services across departmental boundaries could suffer if the units involved did not work together. The overall, support and commitment for e-government initiatives from the top management and political levels appears to be high in most councils. However, this support is not always translated into effective communication of the importance and benefits of e-government from top management down through council staff and eventually to the public. Good leadership is perceived to be important for the successful adoption of e-government, with a range of characteristics, including a thorough knowledge of council activities, staff buy-in capability, quick thinking, and budgetary power expected of a good leader in order to positively influence e-government implementation.

Ideally, an organisational culture that fosters a positive attitude to change and innovation will minimise the extent to which resistance to change or internal political issues will negatively impact e-government implementation. Results a high proportion of the councils had an organisational culture receptive to e-government implementation, mainly as a result of good leadership, high awareness of e-government, an organisational history of change, and/or a positive response to change. Some councils did appear to be experiencing both excitement and frustration with regard to e-government initiatives, which delayed overall e-government implementation. Resistance to change and internal conflicts and political issues in relation to e-government implementation was reported in only 28% of councils.

The availability of financial resources is perceived to be a critical issue for e-government implementation in some two-thirds of local councils. Progress towards local e-government is likely to be slower for smaller councils because they do not have the large financial resources to dedicate to e-government implementation. On the other hand, in one-third of local councils, the availability of financial resources was not considered to be a constraint on development. In some cases, if the benefits of and case for e-government implementation were clearly and positively, organisational investment was expected to follow. However, limited in-house availability of technical expertise is perceived as potentially adversely impacting the speed and scope of the e-government development in local councils by a high proportion of interviewees. However, the availability of shared services and experiences with other councils is one possibility for enhancing resource availability and affordability. Most of the councils outsourced their e-government to some extent, often due to shortage of appropriate technical staff. A high proportion of councils believe that training or up-skilling council staff is vital for the facilitation and maintenance of e-government services.

Almost two-thirds of the councils interviewed perceived that council size will impact on e-government implementation, most commonly because the availability of resources generally depends on the pool of ratepayers. The negative impact of size was predominant for smaller councils due to a conflict between available resources and the high cost of external expertise required. The pressure from external stakeholders, including business and community organisations, local and central governments, was influential in driving e-government implementation in a little over half of the councils. Perceived comparative advantage or the desire to become a leader in e-government implementation appeared to be an influence in one third of the councils in New Zealand. Much of this was driven by council senior management and politicians, possibly in turn encouraging financial support for e-government implementation.

While the majority of interviewees were unable to comment on the availability of an adequate legal and regulatory framework to facilitate local e-government, they were able to respond in relation to specific issues. Some 40% felt that legislative and regulatory requirements related to areas such as copyright, information privacy, digital signatures, electronic transactions, and public records management could be a hindrance to local e-government implementation, although an equal number did not perceive these aspects as insurmountable. In regard to digital divide, the overall impact on citizen participation in e-government is found to be mixed. Major urban and relatively affluent areas reported a low

impact, while smaller councils, those with lower socio-economic areas, or councils with a mostly rural population are impacted more than others. The latter outcome can be attributed to delays in the rural broadband roll out initiative from central government. However, the full extent of the impact that the digital divide has had on public participation in e-government remains to be seen as this interview programme was unable to collect enough data on this issue. Although both the security and privacy of personal information are prescribed by statute, nearly 20% of interviewees did not seem conversant with these requirements. It is possible that this reflects individual interviewees' knowledge rather than a local council's official stance. However, the majority of councils were well aware that both security and privacy are critical for e-government implementation. This council commitment to security and privacy protocols needs to be communicated to citizens and rate payers in order to promote public confidence in and up-take of e-government initiatives.

Local council network infrastructures were found by the majority of councils to be adequate to service their current and future e-government needs. Some local councils have taken initiatives to address infrastructure capability. However, while network bandwidth within the council's immediate area was often reported as adequate, major parts of many council areas, mostly rural, remained poorly serviced with bandwidth availability. This was viewed as a major impediment for e-government implementation by many councils. Councils expect that the bandwidth issue will be minimised with the rollout of the government's rural broadband initiative, which is intended to bring high speed broadband to over 250,000 rural customers at prices comparable to those in urban areas. Data quality and integrity are believed by two-thirds of councils to be important for their e-government implementation. The accuracy of data will determine whether or not a particular service will be implemented online. Bad data has the potential to mislead citizens, damage council reputation and impact citizens' relationships with their council. Availability of data is equally important for e-government implementation. Some councils need to covert historical data into a digital form so it can be made available online. The interoperability of councils' systems, the results are mixed. Some interviewees believe that their council will be able to exchange information over a heterogeneous network in a meaningful and useful manner as they have implemented solutions such as a service-oriented architecture. Some interviewees, however, believed that their council had too many systems or incompatible software packages that would make interoperability an issue for e-government implementation. Only one-third of interviewees acknowledged that adequate interoperability standards for e-government implementation were available, although a number

commented that maintenance of these standards had not occurred, stalling progress with their adoption.

## **CHAPTER 8      DISCUSSION**

### **8.0      Introduction**

This chapter discusses the results that have emerged from the data analysis presented in chapters 5, 6 and 7. These results will be compared with prior studies that either support or contradict the findings of this research work. The discussion will also integrate findings related to the research questions for this study, which are:

1.      What is the level of e-government maturity at the local government level in New Zealand?
2.      What are citizens' expectations of local e-government?
3.      What influences citizens' participation in local e-government?
4.      What objectives do local government bodies have when setting up e-government initiatives?
5.      What are the barriers for local e-government implementation?

### **8.1      e-Government maturity in local government websites**

Using a four-stage maturity model sourced from the most commonly applied and supported models for determining the standard, this study examined the current state of local government websites and the level of maturity that they have reached in terms of the levels of information and services provided on their websites. The assessment framework and scoring techniques were adapted from MeGAP-3 (Flak et al., 2005), Huang (2006) and tools used by Abdelsalam et al. (2010).

**The investigation of 67 New Zealand local government websites shows that most are at an initial stage of maturity, organised predominantly around presenting information about government services and activities on the web.** The results of the website analysis were consistent with information provided by the interviewees on current state of local e-government (chapter 7). For example, one council interviewee acknowledged, *“Our existing maturity is certainly low.”* (Ref: 01-07), while another admitted, *“The level of e-government would be pretty minimal.”* (Ref: 01-37).

The results are also consistent with the findings of other surveys of local government websites. For example, a 2007 benchmarking exercise on New Zealand local e-government initiatives, found that although almost all councils provided some type of online

information or services, interactive functionality was not widespread (LGNZ, 2008). Further, the results support the emphasis on information dissemination highlighted in Fielden and Malcolm's (2010) study on New Zealand local government websites, and studies of local e-government from other countries (Abdelsalam et al., 2010; Flak et al., 2005; Freeman, 2012; Nurdin et al., 2012).

However, many local councils are increasingly focusing on stage two and three i.e. *interaction* and *transaction* stage. With only 34% of councils evaluated as having reached the interaction stage (i.e. stage 2), there is considerable potential for local government to improve two-way communication services with its citizens, both in the depth of interaction with citizens and the breadth of coverage of such services across the New Zealand local councils. Similarly, only 17% had reached the transaction stage (stage 3) in enabling citizens to carrying out full online transactions. This is consistent with a 2012 survey of New Zealand local government websites, which found that less than 25% of councils provided for the online payment of fines, registrations, application and invoices (online payment of rates was available in a majority of council websites) (ALGIM, 2012). The website analysis found that the features of the final, *integration* stage were not implemented by any council.

In the proposed maturity model used for this study, online political participation and e-democracy features were considered as forms of interactions and transactions, and thus part of stages 2 and 3, rather than forming a separate stage. The position taken here is that political participation cannot be the top stage of maturity models as it may involve communications (both one-way and two-way) and non-financial transactions (e.g. voter registration, online voting) between government and citizens that do not necessarily require a high level of technical sophistication (D.-Y. Kim & Grant, 2010). Accordingly, some democracy related services were found to be available in several council websites (although not online voting) as they are less complex to implement.

Although the proposed four stage maturity model developed and used here appears linear, it is not necessary that a local council begins at the information stage and progressively moves through the subsequent stages. Rather, the proposed stage model allows a council to simultaneously develop e-government in each of the spaces represented by the four stages. For example, the website analysis showed that several councils had implemented services pertaining to stage 3 without completing stage 2. Similarly, as noted, where online citizen participation or e-democracy features were found to be implemented by some councils, they were included in stage 2 and 3 of the proposed model. Thus, these stages should be

used as indicators for positioning the organisation in the e-government landscape, rather than as absolute measures. The greatest level of maturity depends on the successful integration of both business processes and technical capabilities across organisations and different jurisdictional levels of government.

## **8.2 Citizens' expectations of and participation in local e-government**

Data on citizens' expectations of local e-government were collected through an online survey and analysed in chapter 6. The results show that a high proportion of citizens (at least 80%) expect information about their local council and downloadable council forms to be readily available on council websites. Comparison with the findings of the website analysis discussed above suggests that generally the information expectations of citizens are being met by most local councils. Citizen expectations regarding online services from local government were dominated by interactions and transactions with their local councils. Over 75% of respondents to the citizen survey expected to be able to pay their rates and fines online and to make online applications for licensing, certification and resource or building consents. Apart from online payment of rates, which is available for a majority of councils, comparatively few councils are meeting this level of expectation. With respect to citizens' expectations around communication with their councils, the situation is mixed. Around 80% of respondents expected to be able to contact their local government councillors and officials online and make online submissions about local government plans and policies. In comparison, around 50% of councils provide opportunities for online consultation and submissions or other forms of online communication. While around 70% of respondents to the citizen survey expected to be able to vote online in local council elections, and currently no local council offers that facility.

These findings suggest that **while New Zealand local council websites are predominantly at the information stage of maturity, their capabilities with regard to online interactions and transactions are lagging behind citizens' expectations in these more complex dimensions of e-government.** Such a conclusion is supported by the prior studies of MORI (2002), and Van Ryzin (2004). These researchers indicated that user expectations, with respect to the benefits a particular product or service, serves as a comparative indicator for measuring its performance at the time of actual use. If the experience exceeds the expectations users have of the service or product, the satisfaction will be high, and this dynamic influences adoption and use of online services. Therefore, if local government wishes to encourage citizen participation in e-government, it needs to meet citizens' expectations by providing and the online services they desire.

Data on factors influencing citizens' participation in local e-government were also collected in the online survey and analysed in chapter 6. **The key findings are summarised and shown in Table 8.1.**

Variable	Dimension	This study
Awareness	Range of information and services	55% of respondents were aware of the range of online information and services offered by their local councils
Motivation	Availability	33% of respondents were satisfied with availability of online local government information and services
	Support	30% of respondents satisfied with support provide to use local e-government
	Satisfaction	38% of respondents found the online local government information and services that they were looking for
	Motivation	50% motivated to use local e-government
Relative advantage	Speed	65% of respondents perceived online local government information and services to be less time-consuming than face-to-face or telephone interaction
	Convenience	65% of respondents perceived online local government information and services to be more convenient than face-to-face or telephone interaction
	Cost	59% of respondents perceived online local government information and services to be cheaper than face-to-face or telephone interaction
	Quality	20% of respondents perceived online local government information and services to be higher quality than face-to-face or telephone interaction
	Flexibility	66% of respondents perceived online local government information and services to better fit the way they liked to do things
	Control	38% of respondents perceived that online local government information and services provided them with better control than face-to-face or telephone interaction.
Trust	Privacy	55% of respondents were confident that their privacy and personal information were safe using online local government information and services
	Security	60% of respondents were confident that their online transactions with local government were secure
Importance	Importance	Local government provision of online information and services was important to 87% of respondents

Table 8.1: Factors influencing citizen participation in local e-government

Nearly half of the survey respondents disagreed that they were *aware* of the range of online information and services offered by their local council. This could be one of the reasons why only 40% of respondents reported using their local council website on a monthly basis or less. It also reflects the findings of Shahkooch and Abdollahi (2007), Altameem, Zairi and Alshawi (2006), Mellor (2006), who found, not unsurprisingly, that people need to be aware a service is available in order to use it. Similarly, Charbaji and Mikdashi (2003) indicated that raising awareness of e-government via publicity campaigns can lead to a positive inclination towards e-government that, in turn, influences e-government participation levels. Van Dijk et al. (2008) found that an awareness of the availability of e-government services is the most primary and basic factor explaining their use. Nevertheless, other researchers have argued that an awareness of available services alone is not sufficient to encourage citizens' usage (Sipior et al., 2010; Susanto & Goodwin, 2010). For example, a publicity campaign launched by UK government in 2005 to raise awareness of e-

government services and encourage citizens to contact their local council through a central e-government website did not result in a measurable increase in demand for services (Cross, 2006).

Only half of the respondents indicated that they felt *motivated* to use local e-government information and services. This was reflected in the relatively low levels of satisfaction with the availability of online information and services, and the support provided to use such services. That only 38% of respondents agreed that they usually found the online information or received the online services they sought raises the possibility of poor or not user-friendly website design, and incomplete or contradictory information on local government websites. Thus, a lack of both intrinsic and extrinsic factors could be an influential determinant when considering the low adoption or use of local e-government by citizens.

The findings on the perceived *relative advantage* of online local government information and services over more traditional service channels was somewhat mixed. The majority of survey respondents perceived online delivery of information and services from local government as superior to traditional channels of interaction with citizens in terms of speed, convenience, cost and flexibility. This is in accordance with the findings of prior studies (Carter & Belanger, 2004; Gupta & Jana, 2003; Sang et al., 2009; Singh, Sarkar, Dissanayake, & Pittachayawan, 2008; Trinkle, 2001). However, while 69% of respondents perceived that the quality of online information and services was at least not worse than traditional channels, the 31% who felt that online quality was lower than traditional channels suggests that there is need to improve access to and delivery of information and services from local council websites. A prior study on Australian e-government services yielded similar results (Zafiropoulos, Karavasilis, & Vrana, 2012). Similarly, the majority of respondents perceived that local e-government does not provide greater control over their interactions with local councils. This contradicts the findings of prior studies of e-government in Cambodia (Welch, Hinnant, & Moon, 2004) and Greece (Zhang & Hsieh, 2010), and suggests that while e-government potentially allows access from any location at any time and provides greater flexibility in managing transactions of all kinds local government, channels with more personal interaction are still considered superior in controlling successful interactions with local councils in New Zealand.

The results of online survey show that respondents are generally confident in providing information and carrying out online transactions via their local council website, suggesting

that respondents *trust* their local government organisations. This finding is consistent with the outcomes of prior studies by Carter and Weerakkody (2008), Gefen et al. (2005), and Taherdoost, Masrom and Ismail (2009), who indicated that trust of technology or e-government has a motivating effect on user acceptance. In contrast, local government that is more interested in using the technology to maintain entrenched power structures and vested interests is unlikely to inspire confidence within its populations and in places even promote resistance (Almarabeh & AbuAli, 2010; Carter & Weerakkody, 2008). From the results of the survey, it is also observed that the existence of local e-government is *important* to a very high percentage of respondents, providing support for the idea that e-government is considered to render local councils more transparent and accountable as the result of the online technology. Similar observations were reported by Verdegem and Verleye (2009) from their e-government study.

Overall, comparison of the findings of the citizen survey with those of the local council website analysis suggest that there is scope for local e-government to play an important role in local councils' interactions with and services to citizens. The relative convenience, speed and flexibility offered by local e-government is obviously clear to many citizens, but for greater citizen participation, online information and services need to match, if not exceed, the quality of interaction, control and results of traditional service channels. Lack of trust in the privacy of information provided online and the security of online transactions does not seem to be a significant barrier to citizen participation in local e-government. Increasing citizen participation in local e-government requires increasing the range and availability of online information and services from local councils. At the same time, local government needs to take active steps to ensure that its citizens are aware of the opportunities provided by local e-government, and are adequately supported in their use of such services so that they are motivated to participate in local e-government. As Griffin (2006) commented:

*“For the government to achieve its lofty goals [for e-government], people will have to know the services are there - and they'll have to be willing to use them. Winning the hearts and minds of the public is just as important as building the actual systems.”* (p. 1)

### **8.3 Local council implementation of e-government**

Data collected through interviews with local council officials were analysed and the results presented in chapter 7, organised using the conceptual framework for understanding e-government developed earlier in the thesis. That model identified potential barriers impeding local government organisations in their adoption and implementation of e-

government. This section discusses these results in light of their alignment with prior e-government studies.

The analysis of local council websites is broadly consistent with the results of the interview programme with local council officials. Both indicate that the current level of local e-government is predominantly based around the provision of information sharing facilities with more limited capabilities for online interaction and transactions. Similarly, citizens' online participation in local government's policy and procedure or in other matters of e-democracy was found to be relatively low. The results suggest that although changes in website design and provision of services have occurred in some councils, the overall status of e-government implementation has not progressed much from the level reported by Griffin (2006) and LGNZ (2008). As the chair of the Local Government ICT Advisory Group commented with regard to the latter benchmarking exercise:

*“The level of capability and knowledge of key e-government elements demonstrate the challenges ahead for councils in providing the level of services increasingly expected from our communities. It also highlights the disparity between larger and smaller councils in meeting e-government standards and ensuring that these become more mainstream in council processes and applications.” (LGNZ, 2008, p. 2)*

This outcome indicates that overall, local councils have generally not met the strategic aims set out in the New Zealand local e-government strategy developed in 2003, which included, for example, *“provid[ing] easy interactive on-line access to local government information and services”* (LGNZ, 2003, p. 10) and *“innovative products and services”* that matched *“global best practice”* (LGNZ, 2003, p. 14), as well as increasing citizen participation in local government democracy through on-line interactive consultation and developing standards and systems for on-line voting. This study found that very few local councils are providing full two-way interaction and transactional capabilities between themselves and their constituents. Although several initiatives for improving the level of local e-government were underway, as reported by interviewees, where these changes will be and when they will take place remains unclear.

The overall progress of e-government initiatives at a national level, as opposed to the local level, is generally far better, with the United Nations' (2012). 'E-government Readiness Survey for 2012' ranking New Zealand as 13<sup>th</sup> among 190 countries in the world for e-government development. The gap between national and local government progress in e-government implementation appears to be the result of a disconnect between national and

local government digital and e-government strategy. This gap between local and national government was also noticed by Fielden and Malcolm (2010). One possible reason is that the local e-government strategy is a guideline self-produced by local government bodies rather a mandatory instruction from central government.

Local councils reported a range of goals and objectives in implementing e-government initiatives. **While no single goal or objective dominated across all or most councils, empowering citizens and enhancing customer service were the most commonly reported**, each by about one-third of the councils participating in the interview programme. **It seems that engaging in e-government is regarded by many local councils as providing an alternative service channel that is becoming increasingly pervasive** in many aspects of life and one that offers specific benefits to citizens in terms of convenience, flexibility and self-service. More focused objectives that would leverage the Internet to enhance local government in tangible ways such as enhancing the engagement of citizens with their council or enhancing efficiencies in order to reduce council costs were mentioned by some councils, but were less widespread. To the extent that goals and objectives for e-government did exist, these tended to be considered as aligned with local councils' organisational goals. Goal alignment is one of the main predictors of IS success in organisations (Hussein et al., 2005), suggesting that these councils should make further progress in their e-government implementations.

However, as noted above, with some exceptions, progress on local e-government in New Zealand had not penetrated far into the interaction and transaction stages of the e-government maturity model used in this study. The extent to which the various organisational, environmental and technological factors identified in the conceptual framework for understanding e-government contributed to this state of local council e-government implementation is now examined.

Only relatively few local councils had a formal e-government *strategy* in place. Although this might have been somewhat expected from the smaller councils, it was also noted that some larger councils and councils who ranked highly in the Association of Local Government Information Management's e-government assessment in 2012 (ALGIM, 2012), reported not having formal e-government strategy. Such councils preferred to 'cherry-pick' ideas from the experiences of other councils, from national initiatives and from sector-based groups such as the Association of Local Government Information Management, rather than developing a comprehensive local e-government strategy that would meet their local

needs. Further, it seems that in some local councils, e-government development is not perceived as a significant or holistic project requiring a formal strategy, but one that can be treated as simply part of a council's operations, perhaps subsumed within another area of council:

*"We think it's part of business as usual. We have customer service program which has some aspirational goals wrapped around it" (Ref: 03-11). "We can work on ideas without having a formal structure in place being such a small organisation of course" (Ref: 03-04).*

Such views contradict the prior studies of Basu (2004), Pilling and Boeltzig (2007), Ebrahim and Irani (2005), and Abdollahi, Fasanghary and Azadnia (2009), who found that a comprehensive e-government strategy is fundamental for successful implementation of online government services and modernising the public sector. Likewise, Michel (2005) concluded that e-government should be perceived as a long-term programme and therefore an appropriate strategy must be put in place. Further, the absence of a formal e-government strategy could variously restrict a local council's e-government initiatives, encourage progress in different directions, or lead to a council failing to achieve its e-government objectives. An e-government strategy can be the difference between success and failure of e-government initiatives (Heeks & Bailur, 2006) or low adoption rates (Damodaran et al., 2005).

With respect to *collaboration*, both internal and external collaboration were perceived to be important for local e-government implementation. Council officials indicated that the importance of collaboration had been communicated to those tasked with sustaining e-government initiatives so that there is no loss of continuity in this collaborative practice with any changes in personnel. The studies of Chen et al. (2006), and Ndou (2004) indicated similar findings with those of this study. Further, their studies suggested that internal collaboration is often perceived as having a more positive effect on e-government implementation than external collaboration, possibly because of an implied disconnect between local councils and central government as was observed in this study:

*"When it comes to dealing with central government agencies, we are at the mercy of what they want to do." (Ref: 05-39)*

*"Central government on the other hand treats local government as just beyond arms length, quite happy to write standards like e-government without local government input, and then expect local government to tag along and join in." (Ref: 04-29)*

Such attitudes seem to reflect local councils' perceptions that their interests are overlooked in collaborative scenarios involving central government. A number of prior studies (Ansell & Gash, 2008; Klischewski & Scholl, 2006; Navarrete et al., 2010) have identified that a power imbalance between participants in a collaborative context with incompatible objectives becomes a threat to the autonomy of the weaker contributor and this in turn affects the effective levels of collaboration. Ansell and Gash (2008) added that unless all participants are able to participate on an equal footing with their partners in the process then what is intended to be a collaborative process is more likely to be driven by the stronger actor.

The findings of this study indicated that both *management support* and political support for e-government implementation were present in a majority of local councils. Many of the interviewees perceived that good leadership was an important element in effective e-government implementation. The research findings of Weerakkody et al. (2011), Alshehry and Drew (2010), Scupola (2009), Gupta and Sahu (2007), and Moon and Norris (2005) indicate that the lack of visible leadership is a leading factor in early failure of the e-government initiatives in many countries. While some of the New Zealand local councils' top management were reported to be highly enthusiastic about e-government initiatives, this was not always communicated effectively to staff and eventually to the public. Several of the interviewees were of the opinion that top management must adopt a 'change-engine' role and steer the transformation to e-government, assigning and procuring adequate resources and managing reluctance and resistance effectively. This is in line with the findings of Al-Azri, Al-Salti and Al-Karaghoul (2010).

A high proportion of interviewees identified that their council's *organisational culture* was supportive of the implementation of e-government services in local council. This conclusion is supported by the findings of Alshehri and Drew (2010), and Altameem et al. (2006), although Al-Sobhi et al. (2010) argue that organisational culture is not a vital issue in implementing e-government projects. Interviewees noted that adoption and implementation of e-government initiatives was facilitated by an innovative council culture, council leadership, and a prior history of organisational change. Again, this is in-line with findings of Moon and Norris (2005) and Altameem et al. (2006). A small proportion of the interviewees emphasised the difficulty of convincing employees to embrace e-government initiatives as these same employees perceived these initiatives could take away their jobs. This finding is consistent with Ndou (2004), who also found much the same effect. Schwester (2009) suggests that employee resistance to change can be countered through a

campaign whereby the impending changes are re-framed as a process whereby e-government application can enhance and improve work environments by freeing employees from more routine processes.

*Financial resources* were identified by the majority of interviewees as a fundamental factor in the efficient implementation of e-government projects. This is consistent with prior studies that concluded that e-government initiatives require long-term financial commitment in order to reap the benefits of implementation (Moon & Norris, 2005; Reddick, 2004). Other researchers, however, suggest that management's ability to tap into political and financial resources and use these resources to show a positive return on investment means that financial resources are less of an issue (Alshehry & Drew, 2010; Weerakkody et al., 2011). Similarly, in this study, a group of interviewees did not perceive a lack of financial resources as an insurmountable barrier for e-government, and their comments reflect this as below:

*"Time is my issue, not money."* (Ref: 09-35)

*"I don't think it [financial resources] has a major role. If there is a case to do something and it does show a decent return on investment"* (Ref: 09-31).

A dearth of skilled technical *human resources* is another major factor that may have prevented a good percentage of local council's progress in e-government implementation. More than half of the councils surveyed were found to have moderately or heavily outsourced their e-government development as the direct result of the availability of technical resources. This finding is supported by studies of Bjørn and Fathul (2008), and Srivastava and Teo (2007). Further, interviewees recognised that their operational staff required considerable upskilling to facilitate and maintain citizen participation in and use of e-government services. This is in line with the finding of Blount (2008), who found that governments require robust systems offering 24/7 services manned by well-trained staff.

The *size* of the organisation was considered to be an important influence in successful e-government implementation by a majority of local council interviewees. This finding is in accordance with IT innovation studies (Basoglu et al., 2007; Ho, 2002; Moon, 2002), as well as e-government adoption studies (Holden et al., 2003; D. F. Norris & Moon, 2005). It is worth noting, however, that Reddick and Frank (2006) suggest that once e-government initiatives have been implemented the organisation size does not influence overall e-government effectiveness. Despite the suggestion by Ifinedo (2007), and Lee and Kim (2007), that smaller organisations appear to adopt IT innovation faster as they are more flexible, their processes are less bureaucratic and they have better coordination between

employees, in this study the smaller councils often appeared to be negatively affected by their size due to the more limited financial and technical resources available to them and the high cost of external expertise required.

The evidence for *external pressure* driving local e-government implementation was mixed in this study, with about half of the local councils suggesting that it was an influential factor, particularly in relation to benchmarking against other councils or participating in shared services arrangements. These results are ratified by the findings of Weerakkody et al. (2007) and Reddick (2004). Presumably, however, the other half of the local councils are feeling less pressured, possibly because e-government development is not mandatory for local councils and/or local government service delivery is relatively non-competitive. The general absence of external pressure from central government is consistent with the findings of Deakins et al. (2010).

According to prior studies (Paskaleva-Shapira, 2006; Pieterse et al., 2007; Scott, 2006; Weerakkody et al., 2011), significant *legal issues* are faced in e-government implementation that arise from migration from a centralised, bureaucratised, paper-based, impersonal, rule-based and disconnected administration model of government to a decentralised, digital, personalised, client-focused, and interconnected model. Laws and regulations relating to government interactions with citizens unnecessarily complicate the provision of services that are feasible and logical from a technical, organisational, and citizen's' point of view. Further, the legal restrictions on data sharing between agencies, poses difficulties for data integration between administrative and regional entities. However, in this study legal issues were not generally perceived as an unassailable barrier to e-government adoption or implementation, with opinion divided on the impact of specific legal issues around copyright, information privacy, digital signatures, electronic transactions, and public records management. In light of the findings of the prior studies, it may have been significant that many of the interviewees appeared not to have an in-depth understanding of the legal or regulatory aspects of council operations.

Evidence in this study for the impact of a *digital divide*, identified in prior studies as potentially a critical issue in e-government implementation, was limited. About 30% of the local councils appeared to have less than 60% of their citizens able to access or take full advantage of e-government initiatives, often because of rural or remote geographical population, where access to broadband may be a problem. Once broadband access is taken into account, the relatively high penetration of the Internet into everyday life and New

Zealand's status as a developed economy means that there are not large groups of citizens excluded or with limited access to local e-government. However, as the study did not collect sufficient information on this issue to comprehensively explore the full extent of any potential impact that the existence of a digital divide may have on public participation in local e-government in New Zealand, this requires further investigation.

The importance of *security and privacy* of personal information within the e-government environment was considered to be critical by the majority of local council interviewees. Unless citizens feel secure in their online information and service activities, e-government initiatives are not going to grow at the expected speed (Beldad, et al., 2009; Ebrahim & Irani, 2005). Only a small proportion of interviewees recognised that for the public there is trade-off between the benefits of online transactions and the potential for the risk of personal information is being misused. As Woo (2006) suggests, personal data is a valuable commodity and maintaining confidentiality within an online environment is extremely difficult because information can be effortlessly recycled for unauthorised, unwanted, unknown purposes.

While adequate technical *infrastructure* can be an issue in e-government development (Fuchs & Horak, 2008), the majority of interviewees in this study perceived that their local councils' network infrastructure, speed and reliability were sufficient for the successful implementation of e-government. However, a relatively high percentage of interviewees perceived that issues with broadband availability within their councils' catchments was impeding e-government implementation to some extent as it restricted their ratepayers, residents and business partners from accessing online information and services. Previous studies by Alshehri and Drew (2010), and Al-Sobhi, Weerakkody and Kamal (2010) have emphasized that e-government requires a technically progressive ICT infrastructure, with nationwide broadband coverage or no matter how ground-breaking the e-government services may be, if they are inaccessible to the public the initiatives are doomed to failure. However, the OECD's (2003) broadband penetration statistics show that development of a more efficient broadband infrastructure does not necessarily guarantee an increase in public uptake as other factors such as high cost or other socio-economic characteristics of citizens including age, education, income come into play (Dwivedi & Lal, 2007).

Many of those interviewed for this study were of the opinion that good *data and information* quality is critical when factoring in the end-user, the public, in local e-government implementation. From the citizen's perspective, e-government sites and services are

expected to be reliable, accurate and up-to-date. If the information on offer through the local council website is of poor quality, citizens will be less motivated to utilise the service. This is consistent with the findings of prior studies in other countries by Wangpipatwong, Chutimaskul and Papisratorn (2005), and Colesca and Liliana (2008). The accuracy and ready availability of information on e-government website is an indicator of a positive response from consumers of that information. Indeed, a high standard of information quality is at the heart of any online environment (Alam & Hassan, 2011).

In this study, opinion was divided over the extent to which *interoperability* of systems was an issue for e-government implementation. Some councils acknowledged that interoperability was an issue in the past but considered that new technology would be able to address those problems. Another group of councils raised issues related to multiple legacy systems, incompatible software packages or stalled progress with the adoption of inter-operability standards that would make interoperability an issue for e-government implementation. Interoperability is a complex process that brings challenges and limitations when implemented within a multi-agency environment, and prior research has highlighted interoperability as a major barrier to implementing one-stop government services (Goldkuhl, 2008; Scholl & Klischewski, 2007; Tripathi et al., 2008). Further, the challenges are amplified while implementing interoperability between central and local governments as local governments tend to lag behind central government agencies in terms of the financial, technological and human resources required for such initiatives. However, Scholl and Klischewski (2007) suggest that the effects of interoperability issues are less critical when the number of communicating groups is small, and that their impacts are not well understood as the existing body of knowledge is fragmented and conceptually confusing.

Comparison of the findings from the local council interviewees with those of the citizen survey suggest that there is a gap between citizens' expectations of local e-government and the current level of online information and services delivered by local councils. In turn, this is likely to mean that there is a low level of digital engagement between citizens and their local councils.

#### **8.4 Socio-technical framework for conceptualising e-government**

The limited e-government implementation by local councils and low adoption rates by citizens indicate that delivering a technical e-government solution is unlikely to be successful without taking into account social pressures or the wider environment in which the technical solution operates. The proposed conceptual framework for this study is,

therefore, based on a socio-technical understanding of e-government, which highlights the inter-weaving of social and technical aspects of the way e-government functions and the relationship it has to the environment in which it operates.

The conceptual framework was used to organize the findings of this study and to help understand the various factors that influence local government's implementation of and citizens' participation in e-government services. The research findings are summarised in Table 8.2. The first two columns list the individual citizen-related, organisational, environmental and technological factors, and summarise their potential influence on e-government adoption and implementation as suggested in the literature. The third column summarises the findings from this study and the extent to which each factor was found to be influential.

Factor	Literature	This study
<b>Citizen</b>		
Expectations	Meeting citizens' expectations of e-government encourages their participation. Understanding and taking these expectations into account when designing e-government services is important in closing any gap between those expectations and reality.	While citizens' information expectations are largely being met, their relatively high expectations around communicating, interacting and transacting online with local government are often not.
Awareness	Awareness of e-government services is a precursor to citizen participation in e-government.	Awareness of the range of online information and services offered by local government is not high.
Motivation	Motivation is a precursor to citizen participation in e-government.	Motivation to engage with local e-government is not high, and satisfaction with the availability of and support for online information and services is low.
Relative advantage	Perceived relative advantage is an important factor encouraging citizen participation in e-government.	Local e-government is perceived as superior to traditional channels in relation to speed, convenience, cost and flexibility, but not quality and control.
Trust	Public trust in government is an important determinant of public co-operation. Trust in e-government is linked to perceptions of the security and privacy of personal information.	Confidence in information privacy and transaction security, and hence trust in local e-government, is generally good.
Importance	Perceived importance of e-government should increase citizen participation.	Local e-government is perceived to be important by most citizens
<b>Organisation</b>		
Strategy	An e-government strategy is an important driver of e-government development and implementation.	Relatively few local councils have a formal e-government strategy.
Collaboration	Provision of e-government services requires both intra-agency and inter-agency collaboration.	Collaboration between council functional units is perceived as more important to local e-government implementation than is inter-agency collaboration.
Management support	Top management support is an important factor in the successful adoption and implementation of e-government.	Top management and political support for e-government exists within most local councils.
Organisational culture	An innovative and entrepreneurial organisational culture facilitates e-government adoption and implementation.	Local council culture tends to be supportive of e-government implementation. Resistance to change associated with e-government is not widespread.

Financial resources	Implementation of e-government initiatives requires adequate financial resources.	Adequate financial resources are an important but not always insurmountable issue in local e-government implementation.
Human resources	E-government implementation is facilitated by the availability of skilled technical staff and trained operational staff.	A lack of in-house technical expertise means that many local councils outsource their e-government development. Up-skilling operational staff is recognized as an important for facilitating local e-government implementation.
Organisation size	Organisation size is positively related to e-government adoption.	Small council size tends to have a negative impact on the availability of financial and human resources.
<b>Environment</b>		
External pressure	External pressure from stakeholders encourages e-government implementation.	Some evidence of mimetic pressure amongst local councils, but also a general lack of mandated or competitive pressure.
Legal issues	E-government requires a broad and complex regulatory and legal framework.	Legal and regulatory issues are not generally perceived as a barrier to e-government implementation.
Digital divide	A variety of digital divides (e.g. Internet access, technical competency, information literacy) potentially hinder e-government implementation and use.	Broadband access is a problem in some councils with rural or geographically remote populations.
<b>Technology</b>		
Security and privacy	Effective management of information security and privacy is an important factor in e-government implementation and delivery.	Information security is treated as an important issue in local e-government and most local councils have a privacy policy that covers electronic information about citizens.
Infrastructure	Broadband infrastructure, speed and reliability are an important enabler of effective e-government.	Broadband availability is perceived as an issue in e-government implementation in a relatively high number of local councils.
Data and information	Information availability and quality are important factors influencing e-government adoption and use.	Information and data availability, quality, integrity, format and duplication were challenges for e-government implementation in a relatively high number of local councils.
Interoperability	Interoperability is an important challenge in e-government implementation given the systems integration and information sharing required between functional units and agencies.	Some evidence for systems (in) compatibility being an issue in e-government implementation. Limited progress in adoption of interoperability standards in local e-government.

Table 8.2: Socio-technical analysis of local e-government in New Zealand

In relation to factors influencing citizens' engagement with local e-government in New Zealand, the main barriers to their participation appear to be a gap between citizen *expectations* and the reality of online information and services offered by local councils, *awareness* of the range of information and services available, and *motivation* to use these. The perceived *importance* and *relative advantage* of e-government appear to be relatively clear to citizens and good levels of *trust* in local e-government exist. However, the case for the relative advantage of local e-government in relation to its quality and the control it offers to citizens is still to be made. In relation to local councils, implementation of e-government appears to be often inhibited by a lack of formal e-government *strategy*, and to some extent by inter-agency *collaboration*, the need for appropriately skilled and trained *human resources*,

and the small *size* of some local councils. Overall, access to adequate *financial resources* was not considered to be an insurmountable barrier to e-government implementation, and *management support* and *organisational culture* were generally perceived to be supportive. In most cases, local councils seem to experience little *external pressure* to develop and implement e-government, although one could argue that the gap between citizens' expectations of e-government and what councils provide should be pressure enough. *Legal issues* do not appear to be a barrier to local e-government implementation in New Zealand, and the presence of a *digital divide* appears to be mainly related to a lack of broadband access among rural or geographically remote populations. Broadband availability was the main *infrastructure* barrier to local e-government implementation identified, and concerns about aspects of *data and information* and *interoperability* were also identified. Most local councils placed a high level of importance on the *security and privacy* of e-government information and services. **The factors identified in this study as barriers to local e-government implementation and use in New Zealand are shown in Figure 8.1.**

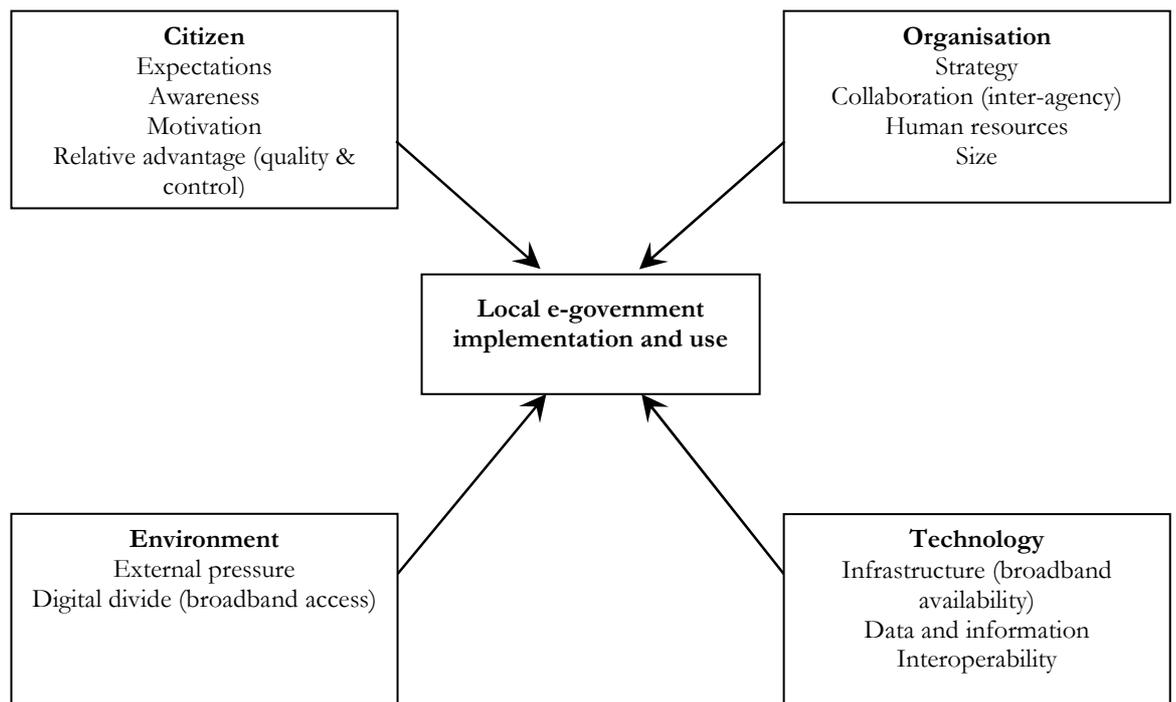


Figure 8.1: Barriers to local e-government implementation and use

## 8.5 Summary

The findings of the website analysis, citizen survey and local council interview programme were used to answer the five research questions framing this study. This chapter has discussed these findings and, where appropriate, compared them with prior studies to see

whether they align or not. The conceptual framework developed earlier in the thesis and used to analyze the findings is summarised and discussed here also. The following chapter will present the contributions of the study, discuss its limitations and implications, together with suggestions for further research.

## **CHAPTER 9      CONCLUSION**

### ***9.0      Introduction***

This chapter summarizes the study's findings and makes some concluding remarks about the possible future direction of local e-government initiatives in New Zealand. It then describes some of the limitations of this study that will need to be addressed in future studies, before suggesting theoretical and practical implications of the study's findings that hopefully contribute to the body of knowledge on e-government and that local bodies can source during their transition to the digital environment. The final part of this chapter outlines some recommendations for future research.

### ***9.1      Local e-government in New Zealand***

Government organisations around the globe have embraced the concept of e-government, as a powerful tool to improve and reform how government operates and delivers services to citizens. e-Government has been defined variously depending on the context within which it is used. Government organisations have perceived it as a tool for improving cost-quality ratios in delivering services to citizens beyond simply automation of service. Citizens have perceived e-government as an appropriate alternate channel for receiving government information and services any time and from anywhere, and for providing a more interactive relationship with government. In practice, the delivery of e-government has often fallen short of that vision. This study defines e-government as the delivery of government information and services to citizens, and other stakeholders, together with the encouragement of citizen participation in the democratic process, using the Internet as the principal conduit.

A variety of theories, models and frameworks have been developed and used by researchers in an attempt to identify the various factors that influence decisions about e-government implementation and use. Even though these studies have provided a rich set of determinants that are considered critical for adoption, the perceived high failure rate of e-government initiatives or slow adoption rate has made scholars aware that existing models are inadequate and that there is a need for rigorously developed frameworks or models (Damodaran et al., 2005). Further, much of the research on e-government has been focused at a national or central government level, with comparatively less addressing the local government context. In New Zealand, specifically, there has been little research on the progress made on implementing local e-government and the issues or factors that may

have influenced the extent of both local e-government initiatives and citizen participation in local-e-government.

This study was aimed at addressing these identified shortcomings by: (1) evaluating the progress of local e-government implementation in New Zealand; (2) identifying citizen's expectations and factors that have influenced their participation in local e-government in New Zealand; and (3) exploring organisational, environmental and technological factors that have influenced the implementation of e-government initiatives by New Zealand local government. Through the analysis of these three research strands, the degree to which local e-government initiatives currently meet citizens' expectations was identified and possible directions for local e-government initiatives in the near future can be suggested.

A four stage e-government maturity model (information, interaction, transaction, integration) was developed drawing on and synthesising the existing knowledge and models found in the relevant literature. An assessment instrument was developed from tools used in prior studies in tandem with the researcher's working experience in local government. The assessment instrument was used to evaluate all 67 local council websites across New Zealand in relation to the proposed e-government maturity model. Given the overall empirical results in this part of the research, it can be concluded that local e-government in New Zealand is predominantly still at the first, information stage of maturity, involving the presentation of local government information and services on council websites. The proposed maturity model has four stages, but these do not necessarily imply a linear progression in e-government development. Rather, local councils can implement e-government in each of these four spaces concurrently. Thus, while overall progress beyond the information stage of local e-government has been slow, examples of interactive services and the capability for online transactions were present in some local councils. Seamless internal and external integration of online government services was not observed in any council.

A web-based survey was developed and used to collect data from citizens on their expectations of local e-government and factors that influenced their adoption and use of local e-government information and services. The survey collected data from 336 participants from all regions of New Zealand. The results suggest that while citizens' expectations around the online provision of local government information are largely being met, their relatively high expectations around communicating, interacting and transacting online with local government are often not. Local e-government is important to citizens.

However, while citizens appear to have trust in local e-government and perceived a relative advantage in the Internet as an alternative service channel, low levels of motivation and awareness of e-government information and services appear to be hindering citizen participation in local e-government. At the same time, the gap between citizens' expectations of local e-government and its current level of delivery mean that there is a low level of digital engagement between citizens and their local councils.

A review of the literature on e-government provided a range of factors influencing and potentially challenging the adoption and implementation of e-government. Using a socio-technical perspective, these factors were classified into organisational, environmental, technological and citizen-related factors that together constitute a conceptual framework for analysing e-government. Officials from 44 of the 67 local councils were interviewed to collect data on the significance of those factors in implementing local e-government initiatives. The results show that local councils have several objectives in developing local e-government, most commonly empowering citizens and enhancing customer service, and to a lesser extent improving citizen engagement, and reducing costs. Overall, the major barriers to local e-government implementation identified through the interviews were that the absence of a formal e-government strategy, inter-agency collaboration, skilled human resources, small organisation size, relatively little external pressure to develop e-government, lack of broadband access in some geographic areas, and challenges with data and information, and interoperability.

Given the findings from the three empirical strands of this study, the conclusion is that the progress of local e-government in New Zealand has been slower than might have been expected and that it will be difficult for local government organisations to meet the national e-government targets for 2020. Without some change in the socio-technical system constituting local e-government, e-government is likely to continue to be funded and incrementally developed by local government organisations as an additional service delivery channel. Citizens' expectations around interacting and transacting with local government, as well as the promised benefits in relation to civic participation and e-democracy, are likely to continue to be somewhat elusive and remain largely unrealised.

A more optimistic scenario would be that despite the currently relatively low level of maturity of local e-government in New Zealand, the continuing and increasing reliance of our society on information and communication technology and the digital environment would increase the pressure from citizens and/or central government on development of

local e-government. This could trigger a focused consideration on online engagement with citizens by local councils, which in turn would involve increased levels of self-assessment of e-government maturity and progress, regular surveys on and consideration of citizens needs and expectations, the appropriate design and delivery of online services, and concerted strategies to create and increase awareness of the benefits of e-government. Such changes are necessary for more local government organisations in New Zealand to occupy the interaction and transaction stages of the e-government maturity model proposed in this study. In addition, as these initiatives gain traction and the deployment of local e-government matures the development of nationwide interoperability standards and synchronisation of technology will hopefully become the norm, rather than the exception. Achieving the final, integration stage requires re-engineering the tangle of local and central government departments and agencies to better enable collaboration and the seamless integration of services to citizens.

## **9.2 Limitations**

Every research study has some limitations, and it is important to present the limitations of the current research in order to place the findings in perspective before discussing the implications of the results. The location of the study in New Zealand limits the generalisation of the conclusions drawn to this context. Further, the prior knowledge sourced for this study was largely based on studies conducted outside New Zealand, so that considerations that are unique to the local environment may not have been considered adequately in developing the e-government maturity model and socio-technical conceptual framework used in this study.

Conversely, the website assessment tool used in this study to evaluate and rank local government bodies was specifically modified to fit the New Zealand local government context. As such it would be unsuitable, without considerable tailoring, for other systems of local government. Another shortcoming of the website assessment tool used is that the classification of functions into categories, such as whether a particular service pertains to the 'interaction' stage or 'transaction' stage is rather subjective. Further, the scoring using the tool was done based on the coder's and/or researcher's understanding of the services being measured and involved a subjective judgement as to the extent a particular feature had been implemented. Further, the scores were given after detailed examination of a local council's website, but without access to the actual process(es) underlying the feature.

The limitations of web-based surveys have been reported in the literature and were discussed earlier in the thesis (Dillman, 2000; Yun & Trumbo, 2000). However, the feasibility of using alternate data collection techniques from such a widely dispersed area was investigated but found to be unsuitable given the available resources for this study. Despite effort being made to optimise the survey instrument at the time of development, pre-testing and pilot testing, there were more questions open to interpretation than was desirable, thus creating additional work for the researcher in coding the results. Further, non-ratepayers, non-members of Residents Associations and citizens not having access to the Internet were left out of the sample frame. The latter, in particular, could provide specific insights into issues such as the existence of a digital divide in relation to local e-government. As the survey sample was gathered from members of Residents Associations, caution should be taken in generalising the survey results to the general population of New Zealand.

Given the geographical distribution throughout New Zealand of potential local council participants in this study, face-to-face interviewing was not considered as this would involve the commitment of more time and resources than were available to this study. For this reason, the study used a telephone interview method despite the limitations inherent in a telephone interview (Yin, 2009). Despite the use of a semi-structured questionnaire for the telephone interviews in this study, during the interviews various questions required further clarifications or explanations. While face-to-face interviews may have produced more detailed information and allowed non-verbal cues to be observed, the volume of data collected through the telephone interviews was considerable and required careful coding and analysis by the researcher. The qualitative nature of the data meant that a degree of interpretation and judgement was required to be exercised by the researcher in synthesising data into appropriate categories and assigning them to the relevant factors contained in the conceptual framework used to inform the analysis. As many of the interviewees were from local council IT departments, their knowledge of some of the interview topics may have been limited. Although the results of this study identify various barriers affecting the implementation of local e-government services, caution needs to be taken when attempting to generalise from the study, as it is possibly the first study of this nature in New Zealand and, as such, the consistency of the results cannot be validated.

### **9.3 *Theoretical contributions***

Despite the limitations mentioned in the previous section, this study and its findings form a useful contribution to the body of knowledge regarding the maturity of local e-government

services, factors influencing citizen adoption and participation in local e-government, and local government implementation of e-government services in New Zealand. Beyond advancing our understanding of local e-government in the New Zealand context, the study is able to make a number of broader theoretical and methodological contributions. The literature review conducted in the study revealed that prior attempts to construct comprehensive frameworks are not empirically grounded or validated (Devadoss, Pan, & Huang, 2003; D. F. Norris & Moon, 2005). Hence, this empirical research investigation makes a contribution by providing an empirically validated model and framework for evaluating and understanding e-government.

First, the systematic review of prior e-government maturity models and their underlying rationales led to the development of a four-stage maturity model that incorporates the latest perspectives on e-government. For example, in a departure from prior maturity models, information and services relating to e-democracy and the online participation of citizens were included within the *interaction* and *transaction* stages, rather than constituting a final, more 'mature' stage in the model. This makes sense if e-government maturity is considered in terms of complexity rather than time. Despite, the relatively recent increase in attention being paid to the e-democracy dimensions of e-government, these services are not necessarily as complex as those pertaining to e-government *integration*, which, given the lack of progress in this area observed in this study, is more appropriate as a final stage of an e-government maturity model. Thus, development of the e-government maturity model used in this study has limited the growth of number of stages within the model without impacting on the website assessment process. In addition, the e-government website assessment tool used in this study was a synthesis of prior approaches (Abdelsalam et al., 2010; Flak, Olsen, & Wolcott, 2005; Huang, 2006). Although it was customized to the New Zealand context using the author's working experience with local government, it offers the basis for similarly customized assessment tools that can be used in other national contexts.

Second, the comprehensive literature review of prior work on factors influencing e-government adoption, implementation and use, in conjunction with a socio-technical approach to conceptualizing e-government, produced a theoretical framework that was used to inform the analysis and understanding of the development and citizen use of local e-government initiatives in New Zealand. The socio-technical perspective accommodates the inter-weaving of both social and technical aspects of the way e-government functions, as well as how that interaction relates to the environment in which e-government operates. Within the framework, the social dimension of e-government encompasses both

organisational and citizen-related dimensions of e-government implementation. This is a holistic, comprehensive and multi-perspective approach in e-government research, and its use in this empirical study of the development and adoption of local e-government services in New Zealand provides a degree of confidence in its applicability and usefulness as a conceptual framework for analysing and understanding e-government more generally. Use of the framework by e-government researchers would facilitate a holistic analysis of this complex phenomenon and avoid the partial understandings that arise from studies that focus only on a specific aspect or dimension of e-government.

Methodologically, this study is a useful example of the conduct of multimethod research that may inform other e-government researchers conducting similar studies. The holistic analysis of local e-government in New Zealand involved not only multiple dimensions of analysis but also multiple methods to research those dimensions. Each method was carefully selected to match the requirements of researching a particular dimension and the conditions under which the research was conducted. The development of a maturity model and website assessment tool enabled the evaluation of the entire population of New Zealand local council websites, and the use of multiple independent coders strengthened the reliability of the findings. The survey of citizens' perspectives on local e-government had a higher response rate than the generally low response rates reported for web-based surveys (Keusch, 2012). The higher response rate can be attributed to the use of pre-notification emails and the enlistment of Residents' Associations around the country to facilitate survey distribution and also legitimate the survey. Similar processes could be followed in future surveys of local government in order to improve response rates. Finally, the use of a telephone interview programme proved to be an effective compromise between coverage of local councils (44 of the 67 in New Zealand) and the level of detail needed to adequately address the relatively large range of relevant factors drawn from the study's conceptual framework. Techniques such as personalised emails, follow-up telephone calls, and trying multiple target points in a local council resulted in a high participation rate of councils, which in turn enabled coverage of urban, semi-urban and rural local government bodies of all sizes.

#### **9.4 Practical contributions**

The findings of this study have important practical implications for local government organisations that are offering online services. The local government website assessment tool developed in the study enables local government organisations to conduct a self-assessment of their e-government maturity, establish stable implementation processes in

the various spaces represented by each stage of the proposed maturity model, and to monitor their progress with e-government development against themselves and other local government organisations. However, as new services and features continue to be added to existing e-government initiatives, perhaps triggered by ever-increasing demands of central government and citizens and the further development of technology, further refinement of the assessment tool will be required.

In order to improve citizen awareness of e-government services, local government organisations need to actively market the desirable advantages and availability of e-government services to their constituents. Awareness campaigns and offering seminars to citizens on the subject of e-government and its objectives creates a conversation around e-government and hopefully positive feedback loops leading ultimately to a well-informed population that are more likely to engage in the overall process of e-government.

However, it is one thing to actively advocate these new services, but equally important to deliver on those promises. Running concurrently with these initiatives there therefore needs to be active parsing of the needs and expectations of the public with regards to these new services so that meaningful progress is made in both online services and e-democracy (D. Bhattacharya et al., 2012; Centeno, Van Bavel, & Burgelman, 2004). Apart from implementing trouble-free access and a highly responsive website with correct, relevant, complete and up-to-date information, there needs to be a concerted effort on behalf of all stakeholders to implement universal standards so that the delivery of services is of a uniformly high standard and seamless. In addition, there must be a clear value proposition for citizens of local government. While citizens are likely to appreciate the relative advantages of e-government in terms of convenience, flexibility and speed, the quality of and control over their online experience of local government needs to at least match that of more traditional channels. Local government should continuously innovate in adding value to their online services, which in turn will further motivate people towards participation in local e-government (Keskinen & Kuosa, 2006).

Although developing citizen-centric e-government initially requires a greater investment, in time and money, in the long-term it markedly improves public usage and reduces any negative perceptions of e-government held by users (Bertot et al., 2008), thus elevating public satisfaction with and engagement in e-government initiatives. Further, channel and media preferences and experience regarding different types of services have a decisive impact on adoption (Ebbers & Van Dijk, 2007; Pieterse, et al., 2007; Van Dijk, et al.,

2008). Therefore, local government should take into account these channel-related impacts and design their online service delivery accordingly.

This study has reinforced the importance of public trust in the e-government concept. Despite the relatively impersonal nature of the online environment, effective communication and high levels of interaction with citizens as true partners in local e-government, such as online feedback mechanisms and opportunities to participate in local government policy development and planning (J Lee & Rao, 2003), will maintain and improve that trust. Paramount in the mind of the public is the security of their personal information. Local government organisations must ensure, and must be able to demonstrate, that online services will provide users with a high level of transaction security and privacy of their personal identity to maintain the relatively high level of trust and confidence among citizens observed in this study. Implementation of such security protocols such as the 'digital signature' will aid in achieving this goal.

All local governmental organisations need to develop and implement an e-government strategy. Ideally, this needs to happen in close collaboration with other local bodies and central government agencies throughout New Zealand. Realisation of the full benefits of e-government requires that no governmental body operates in isolation. Top-level management of local government can act as a change agent, initiating the transformation of organisational culture, systems and processes, assigning adequate financial and human resources, attracting political support, and disarming the inhibiting effects of potential resistance, if any. At the same time, the development and implementation of e-government should be headed by a strong leader who can place e-government within a broader reform agenda, and ensures that it happens.

Funding is a critical factor in the level of e-government implementation, particularly for the smaller local government organisations where limited resources are available for e-government development or are allocated to other improvement works. In order to overcome this issue, national government could provide financial assistance to each local government based on demonstrated initiatives and prior progress made in e-government implementation. This scenario is similar to the financial assistance provided by central government in the United Kingdom to their local government bodies. In addition, local government sector groups such as the Association of Local Government Information Management could introduce expected benchmarks, collaborate on standards and launch more initiatives designed to centralise shared services and information resources. This

would reduce the costs of e-government development, implementation and maintenance for all local government organisations.

Improving the uptake and development of e-government adaptation also involves the early training and engagement of local government employees so that they understand the purpose and direction of e-government implementation and take responsibility for helping to realize its benefits for both local government and citizens. Training of high-level management and leaders is also necessary, so that they are sensitive to the considerations vital to the adoption and success of e-government projects.

Many local government service processes are complex and difficult to implement effectively in a digital environment, given the large volumes of information and documentation involved and the cooperation between council departments. Rather than compartmentalising e-government initiatives, local government must start engaging all organisational stakeholders to feel ownership of such initiatives and their outcomes. Such a re-conceptualisation spreads the responsibility for the re-engineering of processes and implementation of seamless e-government from technical staff to business managers and line employees.

Interoperability between local and central government organisations is of critical importance in making e-government successful. The literature and the findings of this study suggest that local government needs to systematically develop interoperability standards in terms of their work processes, information sharing, value creation, and strategy alignment for the expected benefits of e-government to be realised for all stakeholders. Similarly, e-government requires the development of a legislative framework to facilitate the sharing of information and transactional data across organisational, administrative and juridical boundaries. Since the progress of e-government in New Zealand at the national level is more evolved than that at a local level (United Nations, 2003, 2012), national government could leverage their experience and expertise in e-government development and implementation to provide a stronger lead in promoting guidelines that would standardise local government websites and facilitate consistency in standards across the country. Central government involvement is also needed to accelerate the rollout of low cost, high speed broadband to all parts of New Zealand in order to overcome the main digital divide identified in this study. Finally, incentives at both local and central government could encourage the migration of more traditional aspects of service provision to the digital environment, and their uptake and use by the public.

### **9.5 Recommendations for future research**

The limitations and implications of this study discussed above single out several avenues for future research. With regard to the adoption and implementation of local e-government services in New Zealand, further studies of this nature are needed in order to chart the course of future local e-government development. In addition, further research using other research methods, such as case studies, would enable the gathering of perspectives from a wider range of local government participants and thus a more in-depth understanding and validation of the results presented here. Most of the interviewees of this study were from local government IT departments and as such their knowledge of the overall aspects of local government were somewhat limited. Further research could include interviewees from a wider range of internal and external stakeholders in order to substantiate the findings of this study. Face-to-face interviews could be used to collect richer data in future studies as they allow the use of visuals in presenting questions, and are better suited for asking sensitive questions and dealing with complex issues. Similarly, the inclusion of local e-government stakeholders such as businesses, central government agencies and visitors to the region, would strengthen and increase the validity of the study's findings.

Additional investigation is recommended to address the highlighted limitations of the scoring technique used in the e-government maturity part of this study. Since considering e-democracy features as part of the interaction and transaction stages of the maturity model, rather than a separate stage, is a relatively new idea, additional research is needed to justify their placement there in an e-government maturity model. Further research is required to cover the practical implications of applying a citizen-centric approach to e-government and the impact of personalisation on e-government services in the transaction and integration stages of the e-government maturity model, as these are more complex than earlier stages.

Although analysis of the empirical data in this study supports the applicability of the socio-technical conceptual framework developed to the New Zealand context, additional research is required to apply and evaluate the framework in local administrations in other countries. Additional studies of this nature would enable a comprehensive body of knowledge about local e-government implementation to be developed and international comparisons made. The factors included in the framework could be refined or extended through additional research in other contexts. Any additional factors influencing e-government implementation or citizen adoption of e-government could be tested on a

more extensive basis. The incorporation of other constructs might provide a broader and stronger framework with which to understand citizen acceptance or rejection of e-government and organisational, environmental and technological barriers to implementing e-government services.

In particular, the increasing uptake and role of new technology in e-government raises interesting questions and promising avenues for further research. For example, the potential implications of the huge growth in social networking and social media such as Twitter, Facebook and blogs, require addressing in any future study of local e-government. Similarly, a number of governments worldwide have started moving towards providing accessing to government services via mobile devices that are rapidly developing increased capabilities. Delivering public services through the Short Messaging Service (SMS) channel is increasingly becoming popular in developed countries and in developing countries it is being used creatively in ways not anticipated by more sophisticated users. Future study recommended focusing on validating proposed model for. Further research is required to validate the applicability of an e-government model to m-government, and to identify those services that can be delivered in both domains.

The relatively low level of progress by local government organisations in New Zealand in implementing online services has meant that much of the focus of this study has been on those factors inhibiting the development and adoption of local e-government services. Thus, other studies in contexts where local e-government is comparatively advanced may yield useful findings on the factors that facilitate the growth and progress of local e-government

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A: Assessment Framework Development (information source)

Stage		Taken from
<b>Information</b>		
1.1	Directions to council offices	Flak et.al.(2005)
1.2	Working hours	Flak et.al.(2005)
1.3	Demographic information	Flak et.al.(2005)
1.4	Management team and their contact	Abdelsalem et.al.(2010),
1.5	Mayor and councillors' contacts	Abdelsalem et.al.(2010),
1.6	Council departments and contacts	Abdelsalem et.al.(2010), Huang(2006)
1.7	Local News and Events	Abdelsalem et.al.(2010),
1.8	Strategy and policy	Flak et.al.(2005),Abdelsalem et.al.(2010)
1.9	Virtual City Tour	Flak et.al.(2005)
1.10	Reports (e.g. annual report)	Flak et.al.(2005), Abdelsalem et.al.(2010)
1.11	Privacy and security policy	The Author
1.12	Civil defence and emergency	Flak et.al.(2005), Abdelsalem et.al.(2010), Huang(2006)
1.13	Job Vacancy	Huang(2006)
1.14	Council plans & budgets	Huang(2006), Abdelsalem et.al.(2010)
1.15	Business opportunities	Flak et.al.(2005), Abdelsalem et.al.(2010)
1.16	Road closure/detour	Flak et.al.(2005)
1.17	Tenders & auctions	Abdelsalem et.al.(2010)
1.18	Transport	Flak et.al.(2005), Abdelsalem et.al.(2010)
1.19	Rates	The Author
1.20	Licensing	Abdelsalem et.al.(2010)
1.21	Building and resource consenting	The Author
1.22	Meeting, agendas and minutes	Flak et.al.(2005)
1.23	Parks and recreation centre	Huang(2006)
1.24	Funds and Grants	The Author
1.25	Arts and culture	The Author
1.26	Solid waste and re-cycling	Flak et.al.(2005), Huang(2006)
1.27	Environmental services (e.g. pollution)	The Author
1.28	Library services	The Author
1.29	Cemetery services	The Author
1.30	Forms download	Flak et.al.(2005), Huang(2006)
1.31	Housing	Flak et.al.(2005), Abdelsalem et.al.(2010)
1.32	Permit (e.g. building permit)	Flak et.al.(2005), Abdelsalem et.al.(2010)
1.33	Public health and safety	Flak et.al.(2005),
1.34	Zoning & Planning information	Flak et.al.(2005), Huang(2006)
1.35	Webcasting council meetings/hearings	Huang(2006)
1.36	Community groups and their contacts	Abdelsalem et.al.(2010)
1.37	Community services	Flak et.al.(2005),
1.38	Automatic email update about council's policy or news	Huang(2006)
1.39	FAQs	Abdelsalem et.al.(2010)
1.40	Tourism	Abdelsalem et.al.(2010)

Stage		Conceived from
<b>Interaction</b>		
2.1	Search engine	Flak et.al.(2005), Huang(2006)
2.2	Request for service	Flak et.al.(2005), Abdelsalem et.al.(2010)
2.3	Request for property report	The Author
2.4	Library catalogue search	The Author
2.5	Apply for job	Flak et.al.(2005), Abdelsalem et.al.(2010)
2.6	Apply for grants	The Author
2.7	Apply for permit	Flak et.al.(2005), Abdelsalem et.al.(2010)
2.8	Cemetery search	The Author
2.9	Park and hall booking request	Flak et.al.(2005)
2.10	Inspection booking request	Flak et.al.(2005)
2.11	Submit quotation / submit tender documents	Flak et.al.(2005)
2.12	Apply for certificate (e.g. building code of compliance)	Flak et.al.(2005), Abdelsalem et.al.(2010)
2.13	Apply for rate rebate	The Author
2.14	Rubbish collection booking request	The Author
2.15	Apply for new / renew license	Flak et.al.(2005), Abdelsalem et.al.(2010)
2.16	Apply for building and resource consent	The Author
2.17	Online complaint / report issues	Huang(2006)
2.18	Online survey	Flak et.al.(2005)
2.19	Interactive GIS	Huang(2006)
2.20	Consultation and submission	Flak et.al.(2005)
2.21	Online chat / forum / discussion groups	Flak et.al.(2005), Huang(2006), Abdelsalem et.al.(2010)
2.22	Multiple languages / translator	The Author
2.23	Links to other local, regional or central government websites	The Author
<b>Transaction</b>		
3.1	Reserve or renew library book	Abdelsalem et.al.(2010)
3.1	Complete facility (park / hall) booking process and make payment	Abdelsalem et.al.(2010)
3.3	Order reports and make payments	Abdelsalem et.al.(2010)
3.4	Complete inspection booking and pay fees	Abdelsalem et.al.(2010)
3.5	Payment of property rates	Flak et.al.(2005), Huang(2006)
3.6	Payment of fines	Flak et.al.(2005), Huang(2006)
3.7	Payment of consent fees	Flak et.al.(2005), Huang(2006)
3.8	Payment of license fees	Flak et.al.(2005), Huang(2006)
3.9	Complete rubbish collection process and make payment	Abdelsalem et.al.(2010)
3.10	Complete cemetery services and make payment	Abdelsalem et.al.(2010)
3.11	Voter registration	Huang(2006)
3.12	Online voting	Flak et.al.(2005)
<b>Integration</b>		
4.1	Single payment process for multiple services	The Author
4.2	Single application process for multiple services	The Author
4.3	Single login access all government websites	The Author
4.4	Single payment for all government services	The Author
4.5	Single application process for all government services	The Author

## B: Assessment Framework

### **E-government Assessment Framework**

#### **Information**

Directions to Council offices

Working hours

Demographic information

Management team and their contact

Mayor and Councilors' contacts

Council departments and contacts

Local News and Events

Strategy and policy

Virtual City Tour

Reports (e.g. annual report)

Privacy and security policy

Civil defence and emergency

Job Vacancy

Council plans & budgets

Business opportunities

Road closure/detour

Tenders & auctions

Transport

Rates

Licensing

Building and resource consenting

Meeting, agendas and minutes

Parks and recreation centre

Funds and Grants

Arts and culture

Solid waste and re-cycling

Environmental services(e.g. pollution)

Library services

Cemetery services

Forms download

Housing

Permit (e.g. building permit)

Public health and safety

Zoning & Planning information

Webcasting Council meetings/hearings

Community groups and their contacts

Community services

Automatic email update about Council's policy or news

FAQs

Tourism

## **Interaction**

Search engine

Request for service

Request for property report

Library catalogue search

Apply for job

Apply for grants

Apply for permit

Cemetery search

Park and hall booking request

Inspection booking request

Submit quotation/ submit tender documents

Apply for certificate (e.g. building code of compliance)

Apply for rate rebate

Rubbish collection booking request

Apply for new / renew license

Apply for building and resource consent

Online complaint / report issues

Online survey

Interactive GIS

Consultation and submission

Voter registration

Online voting

Online chat / forum / discussion groups

## **Transaction**

Reserve or renew library book

Complete facility (park / hall) booking process and make payment

Order reports and make payments

Complete inspection booking and pay fees

Payment of property rates

Payment of fines

Payment of consent fees

Payment of license fees

Complete rubbish collection process and make payment

Complete cemetery services and make payment

## **Integration**

Multiple languages / translator

Single payment process for multiple services

Single application process for multiple services

Links to other local, regional or central government websites

Single login access all government websites

Single payment for all government services

Single application process for all government services

## C: Web-based Survey Questionnaire

This survey is part of an academic research project conducted by the Auckland University of Technology Business School on citizens' expectations of local e-government in New Zealand and the issues that may influence citizens' participation in local e-government.

Local e-government involves the use of the Internet to interact with and obtain information and services online from a local council or authority.

This survey will take about 5-10 minutes for you to complete. The information collected will be used to build a better understanding of what influences citizens to use online information and services from their local councils.

Completion of this questionnaire will be taken as indicating your consent to participate. Your response is anonymous.

Concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Professor B Doolin, AUT University, by email: [bdoolin@aut.ac.nz](mailto:bdoolin@aut.ac.nz) or phone: (09) 9219999.

Concerns regarding the conduct of the research should be notified to Madeline Banda, Executive Secretary, AUT Ethics Committee: Dr Rosemary Godbold, by email: [rosemary.godbold@aut.ac.nz](mailto:rosemary.godbold@aut.ac.nz) or phone: (09) 921 9999 ext 6902.

This research has been approved by the Auckland University of Technology Ethics Committee on 13 February 2011, AUTEK Reference Number: 10/245

## PART A

Please answer the following questions by selecting the button with the most appropriate option:

### 1. What is your gender?

- Male
- Female

### 2. What is your age?

- <18 years
- 18-25 years
- 26-40 years
- 41-64 years
- >64 years

### 3. Do you currently have access to the Internet

- Yes
- No

### 4. Do you have access to a broadband Internet connection?

- Yes
- No

### 5. From where do you access the Internet the most?

- Mobile phone or device
- Place of education
- Other
- Home
- Public library
- Workplace
- Internet café

## Part A continued...

### 6. Have you ever visited your local Council website?

Yes

No

### 7. How often do you use the Internet to access information or services from your local Council website?

At least once in a week

At least once in 6 months

Not at all

At least once in a month

At least once in a year

### 8. Please indicate what region of New Zealand you are located in

Northland Region

West Coast Region

Wellington Region

Auckland Region

Southland Region

Hawke's Bay Region

Waikato Region

Otago Region

Gisborne Region

Taranaki Region

Canterbury Region

Bay of Plenty Region

Manawatu-Wanganui Region

Marlborough Region

Tasman Region

Nelson Region

## Part B

Please answer the following questions by ticking the appropriate box. You may tick as many options as are appropriate:

### \*9. What information would you expect to be able to access from your local Council Website?

- |   |   |
|---|---|
| <input type="checkbox"/> Tourism and recreational opportunities                     | <input type="checkbox"/> Downloading Council forms                  |
| <input type="checkbox"/> Information about Council                                  | <input type="checkbox"/> Potential business opportunities           |
| <input type="checkbox"/> Information about Council representation and policy making | <input type="checkbox"/> Disruptions or changes to council services |

Other (please specify)

### \*10. What local Council services would you expect to be able to access online?

- |  |   |
|--|---|
| <input type="checkbox"/> Building or resource consent applications | <input type="checkbox"/> Rates payment    |
| <input type="checkbox"/> Licensing or certification applications   | <input type="checkbox"/> Payment of fines |
| <input type="checkbox"/> Rate rebate applications                  |   |

Other (please specify below)

### \*11. What types of communication with your local Council would you expect to be able to conduct online?

- |  |   |
|--|---|
| <input type="checkbox"/> Contact local government councillors or officials       | <input type="checkbox"/> Receive information about potential business opportunities |
| <input type="checkbox"/> Make submissions on local government plans and policies | <input type="checkbox"/> Vote online in local Council elections                     |

Other (please specify below)

## Part C

Please indicate the extent to which you agree or disagree with each of the following statements by selecting the button that best represents your level of agreement with each statement:

**\*12. I am aware of the range of online information and services offered by my local Council.**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*13. I am satisfied with the availability of online information and services from my local Council**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*14. I am satisfied with the support provided for me to use online information and services from my local Council**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**Part C continued...**

**\*15. I usually obtain the information or receive the services I am seeking online via my local Council website**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*16. I am motivated to use online information and services from my local Council**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*17. Using online information and services from my local Council is less time-consuming than face-to-face or telephone interaction**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*18. Using online information and services from my local Council is more convenient than face-to-face or telephone interaction**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**Part C continued...**

**\*19. Using online information and services from my local Council is cheaper than face-to-face or telephone interaction**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*20. Online information and services from my local Council is of higher quality than from face-to-face or telephone interaction**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*21. Using online information and services from my local Council fits the way I like to do things**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*22. Using online information and services from my local Council provides me with better control than than face-to-face or telephone interaction**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**Part C continued...**

**\*23. I am confident that my personal privacy and information will be safe using online information and services from my local Council**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*24. I am confident that online transactions I conduct with my local Council will be secure**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**\*25. It is important to me that my local Council provides online information and services**

- Strongly disagree
- Disagree
- Not agree or disagree
- Agree
- Strongly agree

**Part D**

**26. If you would like to make further comments on the provision of online information and services by local government in New Zealand, please use the box below:**



Thank you for taking the time to help us with our research

## Additional Optional Information

### 27. Would you like to participate in the Prize draw?

Yes

No

If yes, Please provide your email or postal address below

### 28. Would you like to receive a summary of the survey results?

Yes

No

If yes, please provide your email or postal address below:

D: Survey Invitation Letter

# An Invitation



Dear

My name is Braja Podder and I am a PhD researcher at the Auckland University of Technology (AUT) Business School. Together with my supervisor, Professor Bill Doolin, I am conducting research on local e-government in New Zealand. My research focuses on the local government objectives and initiatives in setting-up e-government services, together with the issues that have influenced these initiatives.

Last year, I had interviewed CEO or IS/IT heads of local & district councils across NZ to obtain views / initiatives in setting up e-government. In the second phase, I am collecting ratepayers / residents view on local government's online services using a survey. The survey information is given below.

Please click the following link to complete the survey:

<https://www.surveymonkey.com/s/G9GCWCK>

**You must be 18 years or older to participate and only one completed survey response is allowed from an IP address.**

**After completing the questionnaire, you will be asked if you would like to be placed in the prize draw for a NZ\$500 gift voucher redeemable for consumer electronics or movie passes or books**

Thank you for your participation

## E: Semi-Structured Questionnaire for Telephone Interview

### **Strategy**

1. How would you characterise the level of e-government currently provided by your organisation?
2. Does your organisation have a formal e-government strategy?
  - a. Does that strategy [or approach] align with the New Zealand government's e- government strategy?
  - b. To what extent and how are citizens' needs and perspectives taken into account in this strategy[or approach]?
  - c. Does the strategy incorporate e-democracy (online participation) as well as online services?
  - d. Who or what unit within your organisation is responsible for e-government implementation and strategy[or approach]?
3. What are your organisation's main goals and objectives in relation to e-government?
  - a. Do these goals align with or conflict with other organisational goals?

### **Collaboration**

4. How important is collaboration with other government agencies in your organisation's e-government implementation?
  - a. What factors influence the effectiveness of this collaboration?
5. How important is collaboration between functional units within your organisation in your organisation's e-government implementation is?
  - a. What factors influence the effectiveness of this collaboration?

### **Management Support**

6. To what extent is there top management support for e-government in your organisation?
  - a. To what extent does your top management communicate the importance and benefits of e-government?
  - b. To what extent does a good leadership influence e-government implementation in your organisation?
7. To what extent is there political support (Mayor and Councillors) for e-government in your organisation?
  - a. What effect does political support (or its lack) have for e-government implementation in your organisation?

### **Organisation Culture**

8. In what ways does your organisation's culture (e.g. attitudes to and experiences of innovation and change) hinder or help support for implementation of e-government?
  - a. To what extent have resistance to change, internal conflicts or political issues influenced e-government implementation in your organisation?

### **Financial Resources**

9. What role has the availability of financial resources played in implementing e-government in your organisation?

### **Human Resources**

10. What influence has the availability of technical expertise had on implementing e-government in your organisation?
  - a. Is that technical expertise available within the organisation or is it sourced externally?
11. What influence has the availability of adequately skilled staff to operate e-government services had on e-government implementation in your organisation?
  - a. Does your organisation provide specific training for your e-government staff?

### **Organisational Size**

12. To what extent has your organisation's size influenced its adoption and implementation of e-government?

### **External Pressure**

13. To what extent has pressure from external stakeholders (e.g. central government, other local authorities, citizens, business) influenced e-government implementation in your organisation?
14. To what extent has a perceived need for comparative advantage or desire for leadership in e-government influenced e-government implementation in your organisation?

### **Legal Issues**

15. Is there an adequate legal and regulatory framework in place to facilitate e-government implementation?
16. Are there specific legal or regulatory issues that hinder e-government implementation?

### **Digital Divide**

17. To what extent are citizens in your organisation's catchment able to participate in e-government?
  - a. Are Internet access, broadband access, income, education, age, or language, issues in citizen e-government participation?

### **Security and Privacy**

18. To what extent is information security an issue in e-government implementation in your organisation?
19. Does your organisation have a privacy policy that covers electronic information about citizens?

### **Infrastructure**

20. Are your organisation's network infrastructure, speed and reliability sufficient to support current and future e-government needs?
21. Is the availability of broadband within your organisation's area an issue in e-government implementation?

### **Data and Information**

22. Is e-government implementation in your organisation affected by issues related to data or information availability, appropriateness or quality?

**Interoperability**

23. Is the compatibility of technological and organisational systems (both within your organisation and with other agencies) an issue in e-government implementation?
24. Are adequate standards for interoperability in e-government available?

F: Participant Information Sheet

# Participant Information Sheet



*Date Information Sheet Produced:* 03.12.2010

*Thesis Title:* **Evaluating Local e-Government in New Zealand: A Socio-Technical Approach**

My name is Braja Podder and I am a postgraduate student at AUT University. I am currently undertaking research for a Doctor of Philosophy (PhD) degree.

I am conducting a series of interviews in order to obtain a current and detailed understanding of local government objectives and initiatives in setting-up e-government services, together with the issues that have influenced these initiatives. Through analysis of these two research strands, the progress made by New Zealand local government toward meeting the objectives set by the State Service Commission will be identified.

I invite you to participate in my research. You have been selected as someone who could provide a helpful perspective on the objectives and initiatives local government has taken, as well as the issues faced in e-government implementation. Your experiences, views and comments on this topic would be a valuable source of information for my research.

Participation is voluntary and you are under no obligation to be interviewed. If you agree to be interviewed I will ask you to sign a consent form that, together with this information sheet, outlines your role in the project and how I will respect your rights as a research participant. I will not ask for personal information or for commercially sensitive information. You are free to not answer a question and may withdraw from the interview at any time.

## **What is the purpose of this research?**

The purpose of this research is to identify local government objectives and initiatives in setting-up e-government services and to examine the issues that have influenced such initiatives. Data collected in the study will be used as part of a thesis for the Doctor of Philosophy degree from AUT University. Findings from this research may also be presented in academic conference and journal papers

## **How was I chosen for this invitation?**

I have identified your organisation as one that has taken initiatives towards e-government. Your organisation has provided a list of people, from which we are hoping to establish participants in the study. As a manager you are someone who can provide a helpful perspective on e-government initiatives that your organisation has taken so far.

## **What will happen in this research?**

I would like to interview you for about an hour at a location and time convenient to you. The interview will be conducted by me, under the guidance of my supervisor, Professor Bill

Doolin from AUT University. I would like to audiotape the interview so that I have an accurate record of the interview, but this would only be done with your consent. A transcript of the interview will be prepared by me, and will only be read by me and my supervisor.

## **What are the discomforts and risks and how will these discomforts and risks be alleviated?**

I do not anticipate any discomfort or risk arising from your participation in this study. Your responses will be used for academic purposes only. No data will be provided to a third party. I will not ask for personal information or for commercially sensitive information. You may be asked questions about potentially sensitive aspects of your organisation's performance. You are free to not answer any question and may withdraw from an interview at any time. Your name and that of your organisation will not be identified in the thesis or any subsequent publication. However, given the small size of New Zealand, it is always possible that a person might be able to guess the identity of your organisation through distinctive features of its operations.

## **What are the benefits?**

The outcome of the research may be a better understanding of what progress New Zealand local government has made towards meeting citizens' expectations and the objectives set by the State Service Commission. The findings of the research may be helpful in informing possible future directions and developments of local e-government in New Zealand and elsewhere. In addition, it will provide an important contribution to academic knowledge in this area.

## **How will my privacy be protected?**

The findings from this research will form part of my Doctor of Philosophy thesis, and may also be presented in academic conference and journal papers. In all cases, the findings will be aggregated so that your comments will not be linked to you personally. Your name or your organisation's name will not be used. If I quote your comments directly, the quote will only be attributed to a pseudonym or generic position title and not to you personally. At the conclusion of the research, consent forms and data from the study will be stored in my supervisor's office at AUT University for six years, before being destroyed.

## **What are the costs of participating in this research?**

The only anticipated cost to you is approximately one hour of your time to participate in an interview.

## **How do I agree to participate in this research?**

I would appreciate it if you could consider this invitation and inform me your decision (contact details are provided below) when you have had a chance to read this information sheet. If you do agree to participate in an interview, I will ask you to read and sign the consent form to indicate your informed consent at the time of the interview.

## **Will I receive feedback on the results of this research?**

If you are interested, I will send you a summary of the research findings upon request.

## **What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Professor Bill Doolin, [bill.doolin@aut.ac.nz](mailto:bill.doolin@aut.ac.nz) (09) 921 9999 extn. 5807.

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Madeline Banda, [madeline.banda@aut.ac.nz](mailto:madeline.banda@aut.ac.nz), 921 9999 ext 8044.

## **Whom do I contact for further information about this research?**

### **Researcher Contact Details:**

Braja Podder  
AUT University Business School  
Tel: 021 1014086  
E-Mail: braja.podder@aut.ac.nz

### **Project Supervisor Contact Details:**

Professor Bill Doolin  
AUT University Business School  
Private Bag 92006, Auckland  
Tel: (09) 921 9999 extn. 5807  
E-Mail: bill.doolin@aut.ac.nz

*Approved by the Auckland University of Technology Ethics Committee on 13 February 2011, AUTEK Reference number 10/245.*

G: Interview Consent Form

# Consent Form



*Thesis title:* **Evaluating Local e-Government in New Zealand: A Socio-Technical Approach**

*Supervisor:* Dr Bill Doolin, Professor of Technology and Organisation

*Researcher:* Braja Podder, PhD student

- I have read and understood the information provided about this research project in the Information Sheet dated 03.12.2010.
- I have had an opportunity to ask questions and to have them answered.
- I understand that notes will be taken during research discussions and that they will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I agree to take part in this research.
  
- I wish to receive a copy of the report from the research (please tick one):  
Yes  No

Participant's

signature:

.....

Participant's name:

.....

Participant's Contact Details (if appropriate):

.....

.....

.....

.....

Date:

***Approved by the Auckland University of Technology Ethics Committee on 13 February 2011, AUTEK Reference number 10/245.***

*Note: The Participant should retain a copy of this form.*

H: Confidentiality Agreement

# Confidentiality Agreement



**Thesis title:** Evaluating Local e-Government in New Zealand: A Socio-Technical Approach

**Supervisor:** Dr Bill Doolin, Professor of Technology and Organisation  
**Researcher:** Braja Podder, PhD student

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- I understand that all the material I will be asked to transcribe is confidential.
- I understand that the contents of the tapes or recordings can only be discussed with the researchers.
- I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber's signature: .....

Transcriber's Name.....

Transcriber's Contact Details (if appropriate):

.....  
.....  
.....  
.....

Date:

Project Supervisor's Contact Details:

Professor Bill Doolin  
AUT University Business School  
Private Bag 92006, Auckland  
Tel: (09) 921 9999 extn.5807  
E-Mail: bill.doolin@aut.ac.nz

**Approved by the Auckland University of Technology Ethics Committee on 13 February 2011, AUTEK Reference number 10/245.**

*Note: The Transcriber should retain a copy of this form.*

## I: Example Interview Data

Council ID	Interview Data (question 2)
1	No we don't. No formal e government strategy
2	No there's not, and thinking about that it's probably something that we should embark on. We are doing things to some extent a piece-meal like we have two projects going on at the moment; one is the project that is involved in electronic production of agendas and minutes and direct connection and publishing to the web. We have also looking at web casting of council meetings and possibly televising council meetings; we haven't sort of reached that conclusion yet. We sort of have two projects been undertaken at the present time.
3	Not that I'm aware of. But of course, we are aware of the wider e-government initiatives that have been taken-up by in the central government. Although I'd say that there isn't a lot of visibility here, coming from a Wellington based job. So I've seen a bit more in my previous job than here.
4	No we don't, we are small council. We actually don't have anything formal in that sort of way but of course I have gone and read the expectations, that was a couple years ago now. We tend to be a little bit more flexible and that we can work on ideas without having a formal structure in place being such a small organisation of course.
5	Yah, as I said we operate through e-gov operability standards which defines particularly the web standards, its quite deliberate, specific ALGIM - Association of local government Information managers applies those standards to be a review of every local government website. And as of last week, Dunedin's council is number 6 in the country's rated on those standards for the website, which includes obviously the online services. Its not a bad result and those are the standards we apply as well as our open source software standards which is matrix and comes with compliance sort of requirements as to how the products are deployed.
6	No , we are not actively talking about having an e government strategy.
7	we have a draft , we call it online services strategic plan, and that's probably three quarters completed, so yes there is a formal strategy that has been developed and we are in the process of finalising that.

- 8 No we don't
- 10 No we don't that's something I have probably just taken up the role as an IT officer, sorry the IT manager here. So that's just something that we just need to look at and sort of form the quality. Yes yes yup. We are part of ALGIM. So for a start we look where ALGIM has gone with their e government policies. And that kind of thing sort of then we sort of then see how we work with in the ALGIM and e government policy situation to have a more of a way of suggesting and how it works with sort of smaller more of rural authority and a lot of those policies at that time around are on more sort of urban high density areas whereas we are quite the opposite .
- 11 No because we think it's part of business as usual. We have customer service program which has some aspirational goals wrapped around it. we have an independent program wrapped around our GIS and we have a business x factor that says we want to make working with our citizens which is easier for them. So if I had an e government strategy, I would right it put in the drawer and never want to look at it.
- 12 No, we don't have a formal strategy. A lot of the things that I am saying to you is coming from my head.
- 13 So our focus will be moving away from you know processing providing people with a system. so at a very very high level that's the direction we are heading in at the moment
- 15 No we don't
- 16 We do, that's something that our council is talking about at the moment , and part of moving to having more e government , relates to us changing our line of application of business suite, currently the system that we are running doesn't interface where with e government and moving to a system which will.
- 17 No.
- 18 No. it is simple, we are a very small council
- 19 No that will be our ultrafast urban and rural broadband and our website development as we get more sophisticated that's the part that's to be done. One of the things that we would like to do is do them as a conjunction of laboring councils because we have got small authorities so that people can find similar data for similar councils or more or less the same place rather than everybody sort of rising a new label for cemetery and you might search on it .

So we need to be more sophisticated so we are at sort of two or three out of ten rather than eight or nine out of ten.

- 20 (Do you have a formal strategy )- yes, strategy for introducing server services over the next 12 months to 2 years.
- 22 No we don't have right now. We are putting one, a team working on that independently
- 23 No although that's something that me and my role and talking a lot about the last three years around a digital strategy for the council , the region or the district I should say, and there's been general agreement but never been formally tasked. we are actually producing that. So out of that will come further down the chain a e-strategy. Have a level of delivering services online.
- 24 No, we as a small council haven't got a formal e-government strategy. We just, incorporating is part of our web strategy as to where we want to go and are planning and going forward
- 27 No, Its on the list of things we need to be looking at. We are a very small department and there is the communications manager, Me, I'm the communications officer and I'm in charge of the website, and we have another part-timer who helps out. So don't have a lot in the way of resource. We are very aware of it and we got quite a good score on the last web evaluation report from ALGM. We got a quite a good report
- 28 I-strategic plan about 18 months ago. a huge focus on online services
- 29 no formal IT strategy here
- 30 I wouldn't say that we have a formal. No. it's more component driven so that as various opportunities are seen to get more information out there quickly and easily then we look at developing those , well not independently as part of a bigger structure. Overriding formal proportion of that would be further up the tree as far as the direction goes. It's more based around providing an excellent service to our rate payers and that's just partial of that excellent service whether or not the person is mowing the lawn or cleaning the drains , picking rubbish or at a front desk or providing information on the web so it's more sort of a global strategy there.

- 31 No, we don't . we did submit to the government the igov proposal and that did sound like a good way to get that confirmative all cross services and again I think that had a bit of a slow uptake and we haven't really pushed it down to a path say we would do these particular services online and we do have a lot of services online but those are non financial transition base. So those are for property GIS signatures and those things are non financial trans are not gone down yet, which is more of the e-commerce route.
- 32 I am waiting for the whole strategy to be developed at the moment.
- 33 No, we've got a strategic plan for IT. We have a communication policy and we got a draft information management strategy together they form some direction and on the bases on where we are, we are putting the tools in place in order to be able to provide a much better e government
- 34 We are actually developing a strategy for our online services, I guess you could call it an e-government strategy, but it's a strategy to get all our services online. I think we are looking at a brain storming meeting in about 2 weeks time, we are trying to extract all information we can put online
- 36 No, but currently being reviewed
- 37 No, No particular imperative to do it at this point.
- 38 No
- 39 No we don't
- 40 We don't, not at this stage, we are currently working on our IT strategy which will encompass some change and move in that region as you can imagine one of our biggest drive is across the organisation and from our public, from our customers and clients, to definitely progress into that area, just about everybody has a mobile phone that is capable of twitter and facebook and just about everybody has connectivity now to internet may be it slow in some rural areas, so people are demanding those kind of services to be brought forward online so from a strategic planning perspective, yes its coming, in terms of delivery not just there quiet yet.

41 Well that's the other thing that we need to talk about, because there is a lot of stuff going on which I am sure you are aware of with central government, central government is also now overlapping on our local government. I have just come from a central government rally business strike. I have never seen central govt or local govt's face before now, you might be aware that the department of internal affairs has a project called service link running we have got twenty staff running on it and that is to do online transactions for all government agencies for central and local government. So the two of us near the ring, [xxx] and myself is going through. That's interesting because that is exactly what we are doing, so we are doing exactly what you are talking about. But just for our particular services. We also knew that department of building -housing has got online contacting system which we have been talking about for sometimes to do online building consents. The DIA has got the papers worked out, it's not working model but they have got some mark-ups for work pages and they have got building consents in there. So if you look online they haven't got all of their stuff, and also seems to be linked to login igov authentication. I see this as all being part of the same picture. But I think it's certainly eccentric at this the point of view that they are trying drive doing this once and doing it for everybody. There is a lot of movement in that space. We are all doing our own thing. I don't think this government will need a replacement in order to continue that and I don't think I will allow that to happen because you see there is a lot waste and duplication of effort.

42 No

43 No