

E-service in the Public Sector

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Abstract: E-technologies are increasingly being recognised as effective tools that can foster an environment of improved service, transparency and improved governance within the public sector. Today, access to information and communication technologies (ICTs) plays an essential role in economic and social development. As public interest in the Internet and e-technology solutions continues to grow, there is an increasing expectation that they will be utilised in national and local governments for more efficient supply and value chain management and for improving public access to information and services. E-technology has become a catalyst for enabling more effective government through better access to services and the democratic process. There is much debate over the role and the value of e-service within public sector organizations. This paper examines the effectiveness of e-services within the public sector with a focus on four specific facets of effectiveness: the view of management and e-technology strategists; social, cultural and ethical implications; the implications of lack of access to e-technology infrastructure; and the customers' (citizens') view of the usefulness and success of e-service initiatives with reference to a case study of a local government e-service initiative within New Zealand.

Keywords: Case Study in E-service/E-business, E-service, Digital Government, E-readiness

I. Preview

The most prominent of the recent advancements in Information and Communications Technology (ICT) has been the emergence of the Internet, Web-based technologies (e-technologies) and global networked economies. Today, e-technologies play an increasingly significant role in our day-to-day lives. They have fundamentally transformed the technological, economical, political and social landscapes.

The competitive imperative of the private sector has driven businesses into the digital world. As a result, the private sector has steadily set higher standards of service (through the application of e-business and e-service solutions) both domestically and internationally. The most significant reform in the public sector has been that of revolutionizing the supply chain management and the value change management through the application of e-technologies.

To deliver the products and/or services in a timely and cost effective manner, the private sector has had to increasingly streamline business processes. The supply chain

is a network of facilities for obtaining raw materials, transforming raw materials into intermediate and/or finished goods, and distributing the final products to markets. Typically, the supply chain integrates manufacturing, distribution, conveyances, retail outlets, people, and information through functions such as procurement or logistics so as to supply goods and services from the origin (source) through to consumption (markets). Supply chain management is considered as the linkage of all the activities that are involved in processes and functions that were mentioned above. It brings together supplier, distributor, and customer logistics requirements into one cohesive function with a focus to reduce time, eliminate redundant functions, and minimize inventory costs.

The value chain is a connected series of value adding processes throughout the production of goods or delivery of services – including: inbound logistics; production operations; sales and marketing; support services and finally outbound logistics. A value chain model can highlight specific processes within the business where the application of e-technologies can impact the business in a strategic fashion.

Digital (electronic) private sector corporations are capable of moving beyond traditional strategic ICT-enabled solutions so as to benefit from digital links with both other organizations and people alike. They can build supply and value chain management systems using Intranets, extranets, or special supply and value chain management solutions. The strategic value of e-technologies in order to enable speedy and cost effective delivery of products and services is outlined in Figure 1.

Public sector organizations deal with complex network of suppliers (and distributor) and sophisticated value chain systems on a daily basis. As public interest in the Internet and e-technologies continues to grow, there is an expectation that they will be utilised in national and local governments (similar to that of private sector corporations). Consequently, many innovative public sector agencies world-wide have had to create new ways in which to use e-business and e-service solutions (known as electronic or digital government) so as to enhance citizens access to information and services, improve the efficiency of processes within business units and establish more productive relationships with both citizens and private sector agencies alike.

The introduction of e-service solutions within the public sector has primarily been concerned with moving away from traditional information monopolies and hierarchies. What's more, e-service and e-business (through digital government) have fundamentally transformed the ways in which the logistic processes and supply chain dynamics are managed

within the public sector. However, e-service remains a challenge to both citizens and public sector agencies alike. Governments must not only maximize the benefits that are offered (through the application of digital government and e-service) but must also avoid the many pitfalls (economical, social and cultural) associated with rapid technological change. That is to say, even though ICT-enabled government and e-service have become a catalyst for better government, the challenges to effective government within today's knowledge society are profound.

Figure 1. The Strategic Value of e-Technologies

Efficiency	
Time	Accelerating business processes and activities
Distance	Reducing geographical and distance inhibitors/barriers
Creativity	Enhancing existing business processes and activities
Effectiveness	
Time	Improving the flow of information and business intelligence throughout the supply and the value chain components
Distance	Enabling integrated control of the supply and the value chain processes
Creativity	Enabling new (and/or modified) processes
Growth	
Time	Obtaining early market entry/presence
Distance	Introducing new products to new markets
Creativity	Developing new products and services

Recently, there has been much debate over the value and effectiveness of e-service within the public sector. This paper elaborates on the strategic role, the value and the effectiveness of digital government that enables e-service. Four specific facets of effectiveness have been examined:

- Effectiveness from the point of view of management and ICT strategists (concerning the implications of ICT and e-service in the public sector).
- Effectiveness as it concerns social, cultural and ethical implications of e-service and e-business.
- Effectiveness with reference to differences in access to ICTs (digital inclusion/exclusion).
- Effectiveness from the point of view of citizens - a preliminary study of the citizens' view of e-service and e-business.

The paper is presented in two parts. Part one (based on a review of previous studies and analysis of digital government and e-service cases such as: [2], [3], [4], [5], [6],

[7], [10], [12], [13], [14], [18], [20], [22] and [35]), reviews the fundamental concepts of digital government and e-service followed by discussing the effectiveness as outlined in (a), (b) and (c).

Part two of the paper is based on a case study of a digital government and e-service project within the Canterbury region of New Zealand. The case study examines the effectiveness of e-service, efficiency of logistic processes and relevance to e-technologies as outlined in (d). The methodology for gathering information included interviews with project sponsors (and a number of other stakeholders) and a combination of formal interviews and surveys of several focus groups of users.

II. Digital Government and E-service: An Overview

This paper views the term 'governance' as a guiding process for decision-making and managing day-to-day activities and interaction with one another (within organizations, groups or societies). *Digital Governance (e-governance)* is a term used to emphasize the application of Information and Communication technologies (ICTs) in governance systems and processes. *Digital Government (e-government)* is the use of ICTs in general and Web-based technologies in particular, in order to: promote and motivate a more operationally efficient and cost-effective government; facilitate more convenient government services (and information) to citizens and businesses; enhance economic development; reshape and redefine community and government processes; and make government more accountable to their citizens. Digital government often consists of digital service delivery, digital governance and digital democracy.

E-Service refers to solutions and processes that allow electronic delivery of services (such as providing information, consulting, support, initiating processes – to name but a few) mostly through digital government/ governance initiatives. *E-Service* (in public sector) as discussed in this paper is closely associated with digital government initiatives.

Technology is the backbone of the required infrastructure that supports digital government. Yet there is a danger in placing too much emphasis on technology. Technical innovation on its own is not enough to drive the development of digital government and e-service solutions.

The political and financial support for e-service can be accompanied by rhetoric and hype. It is fair to say that the potential benefits of digital government and e-service can only materialize when initiatives are introduced as part of a well-planned and properly supported social and cultural environment. There is also a need for considering tools and metrics (performance measures) in order to not only assess progress and effectiveness on an ongoing basis, but also to ensure that rhetoric of e-service is matched by reality.

E-service and digital government/governance is not primarily a technical exercise, but rather an attempt to improve the political and social environments and to introduce a fundamental change in the ways in which public

sector functions (e.g. value chain and supply chain processes) are performed. The essence of government centres on relationships. Hence, an effective model for developing digital government solutions needs to view digital government and electronic delivery of service to citizens as a hub whereby e-technologies are introduced so as to interconnect the various domains of governance.

Extensive research has been carried out (by various practitioners and advisory/interest groups such as the International Centre for e-Governance – www.icegov.org) in order to examine the right level of integration of governance domains and the role and capacity of government (e.g. [4], [3], [24], [25], [22], [26], and [29]). Overall, there can be no one particular answer that can address all cases of e-service and digital government across the board.

As the application of ICT and e-technologies in the public sector within the developing nations becomes widespread ([3], [4], [35] and [29]) we begin to observe a progression through the various stages of digital government that enables e-service:

- **Stage 1** - Improving internal functional efficiency through the application of ICT.
- **Stage 2** - Improving internal communications (through the application of electronic mail) and introducing workflow management systems for increased process efficiency.
- **Stage 3** - Providing access to information with regards to services and the democratic process (initial stages of enabling public/social inclusion).
- **Stage 4** - Putting in place applications that would not only enable citizen participation through feedback, but would also allow for transactions between citizens to government (C2G), businesses to government (B2G) and government-to-government (G2G).
- **Stage 5** - Introducing digital democracy – technological solutions that would enable participatory action and democratic processes.
- **Stage 6** - Introducing integrated electronic or digital governance.

III. What Motivates E-service within the Public Sector?

Overall, the public sector's view (national or local governments) of e-service through the introduction of digital government initiatives is likely to include:

- Automating government systems and the online delivery of services
- Adopting network-based technologies and migrating government functions to the Internet
- Introducing electronic capabilities and practices to government so as to reduce costs, reduce fraud, and increase efficiency
- Adopting ICT so as to foster economic growth and

conduct business

- Improving (re-engineering) the structures of government and the nature of public administration
 - Adopting ICT to foster constituents' engagement, improved political accountability, and e-democracy
- Local governments (e.g. see [30], [5]) seem to concentrate on:

- *Prompt, accurate service* – Local governments can potentially receive millions of calls per year. Resolving a high percentage of these calls the first time they occur can result in significant efficiency gains and cost savings.
- *Improved quality of service* - One client of a local government can potentially generate up to dozens of files in different locations. Local governments are seeking to convert these to one secure and accessible file in order to help provide continuity and coordination of local government support.
- *Removing barriers and tackling social exclusion* – Local governments are aware that many clients do not have the skills to use electronic services. Local government agencies need to set up networks of learning centres in community centres so as to teach people the relevant Web technology skills.
- *Local access points* – It has been shown [30] that up to 20% of customer queries cannot be addressed immediately. Clients often need to meet with a “professional.” Local governments can benefit from the setting up of community access points to allow clients to meet ‘professionals’ through online video links.

Figure 2. Forces That Motivate e-Service through Digital Government

Driving Force	Average Score 5: Essential 0: Not important
Perceived benefit to local people	4.3
Authority's strategy	4.1
Influence of officers	4.05
The need to modernise services	4
Influence of members	3.7
Best value	3.5
Central government initiatives	3.5
Potential cost savings	3.3
Influence of suppliers	2.9

A survey of potential motivators of digital local government and e-service [30] indicates that *improving service to constituents* is rated as being the most important factor (Figure 2).

IV. Effectiveness of E-service: the View of Strategists and Technology Practitioners

The influence of strategists and practitioners' view on public perception of digital government can impact upon the successful implementation of e-service initiatives.

A review of various viewpoints over the implications of digital government (e.g. [3], [5], [35], [9], [19], [23], and [34]) indicates that there are at least four schools of thought:

- pure optimism
- optimism with some concerns
- pessimism
- technology viewed as a tool only - but not a driving factor on its own

The optimists argue uncompromisingly that the use of technology in governance represents a major once-and-for-all improvement in the capabilities of governance ([23], [21] and [35]). The only cost is considered to be the investment on the ICTs and the day-to-day operational costs. This optimistic view appears to be based on the classical cybernetic theory [32].

The second group accepts at least the possibility of greater control, quality and rationality in decision-making. However, they argue the efficiency gains through digital government come at a price. They believe unless safeguards are put in place, digital government may result in compromising citizens' rights such as:

- the right to individual liberty and privacy
- the right to influence governmental decision-making ([35] and [19])
- losing control over politicians' decision-making agendas [34]

The pessimists argue that the application of technology in government will actually compromise the quality of decision-making. They are concerned that excessive demand for policy analysis based on many categories of information will cause delays in action – “paralysis by over-analysis.” There is a fear that due to mechanical rule following, overly simple modelling, the cultivation and the exercise of judgement in decision-making will be downplayed.

The followers of the last school of thought view technology as a tool and argue that the impact of ICT solutions and e-technologies cannot be viewed in isolation. They view both continuities and changes in governance as being driven socially and politically, and not by technology itself. Technology is seen as a tool for either changing or preserving the styles of governance (e.g. [15] and [11]).

Each theory that has been mentioned above has some empirical support - although most empirical studies have been of a rather limited scope and are not in general designed to test, let alone falsify these rival theories.

Overall, accepting any of these viewpoints as being applicable to every case concerning e-service and digital government would be unrealistic. The viewpoint(s) that can best describe the parameters that influence digital government and e-service strategies depends on numerous factors - such as social and cultural aspects; the

technological infrastructure; past experience with the application of ICTs; the level of education and interest in the political process, to name a few.

Some other social, cultural and ethical aspects of ICTs and e-technologies that may hinder the rollout of e-service (and digital government) initiatives can include:

- concerns on individuals' rights and privacy
- concerns over information security
- impact on jobs, workplaces and social interaction

V. E-Readiness: Access, Availability and Affordability of E-technologies

Today, access to e-technologies and ICT is critical for economic and social development. Some international organizations including the International Telecommunication Union (ITU) have been making efforts to bring together policy makers in order to agree upon commitments to strategies towards socially and digitally inclusive societies worldwide. In 2003, the World Summit on Information Society (<http://www.itu.int/wsis>) organized by the ITU made progress towards establishing an agreed upon set of strategies to enhance social inclusion (access, availability and affordability).

There is much optimism that we are facing myriad of digital opportunities where the means exist to broaden participation in the network-based economy and to share its benefits. At the same time, differences in diffusion and the use of ICTs and electronic networks appear to be deepening and intensifying the socio-economic divisions amongst people, businesses and nations. This phenomenon (known as the *digital divide*) can lead to: divides between countries; social divides within countries (related to income, education, age, family type, and location) and business divides (related to sector, region, and firm size).

A review of some of the studies concerning *digital inclusion/exclusion*, *digital divide* and *e-readiness* (e.g. [28], [1], [7], [8], [12], [16], [29], [33], and [27]) indicates that there are significant differences in the adoption of ICTs, network economy and digital government worldwide. This section of the paper outlines a small sample of these studies.

META Group [16] examined the digital commerce (e-commerce) competitiveness of 47 countries. According to the author of this study (Howard Robin), “Traditional industrial-age measures of production and performance have lost relevance in the information age. Currently, information processing capability is a better indicator of national competitive advantage.”

The research by the META Group ranked 47 countries in five different categories in order to establish an overall ‘*information age technological competitiveness*.’ These categories included knowledge jobs; globalisation; economic dynamism and competition; transformation to digital economy; and technological innovation capacity. The results confirmed differences in the adoption and the use of ICTs and electronic networks within the countries that were studied.

The first fifteen countries in the overall ranking of 'information and technological competitiveness' included: the USA, Japan, Germany, France, Finland, Canada, the United Kingdom, Australia, the Netherlands, Taiwan, New Zealand, Belgium, Spain, Sweden and Hong Kong (SAR).

Information Society Index (ISI) involved 23 parameters in its study of the use of ICTs and e-technologies within 150 countries [27]. The study concluded that 55 out of 150 countries accounted for 98 percent of the total ICT resources. The top 55 countries were classified under four categories – including:

Skaters – countries with advanced ICT and social infrastructures.

Striders – countries that appear to be moving purposefully into the information age, with much of the necessary infrastructure in place.

Sprinters – countries that are moving forward in spurts before needing to catch their breath and shift priorities due to economic, social and political pressures.

Strollers – are those moving ahead but inconsistently, due to limited financial resources in relation to their vast populations.

The 'skaters' were: Sweden; Norway; Switzerland; the USA; Denmark; the Netherlands; the United Kingdom; Finland; Australia; Taiwan; Hong Kong (SAR); Japan; Singapore and Canada. Figure 3 displays the summary of ISI research.

A survey of online governance conducted by UNESCO [29] outlines a number of key inhibitors to the successful implementation of digital government and e-service initiatives – see Figure 4.

Numerous other studies (e.g. [29], [30], [5] and [5]) indicate that many other factors can hinder the successful introduction and effectiveness of e-service digital government solutions – some of which are outlined in Figure 5.

A relatively small sample of research outcomes cannot be applied to all countries/regions. However, it appears that many countries are at the initial or halfway stages of adopting Web-based solutions in order to introduce e-service.

It is fair to say that unless the barriers to access, availability and affordability of ICTs within nations are addressed, the success of *bringing to reality the vision of e-service through digital government* would be limited. The causes of digital divide can limit the successful implementation of digital government.

VI. E-service in Local Government: A Case Study

One of the parameters that can potentially impact upon the successful introduction of e-service would be that of the public's view (sometimes based on previous experience from digital government solutions) of the effectiveness of

digital government. To date, there appears to be little evidence of the citizens' view of digital government that enables e-service. This section is based on a case study that examines the users' view of a digital government initiative within New Zealand.

New Zealand's e-government strategy (<http://www.e-government.govt.nz>) emphasizes the role of the Internet and e-technologies as the dominant means of enabling ready access to government information, services and processes. This strategy envisages the implementation of a single 'one-stop shop' portal to all New Zealand government services that are seamlessly integrated with the government's back office – comprising of the Inland Revenue Department, social services agency, local bodies and a number of other government departments.

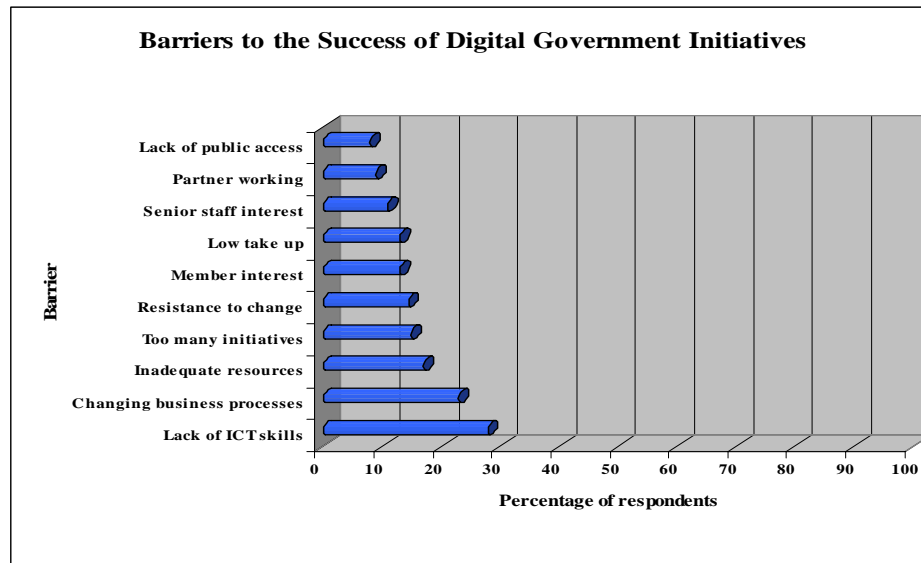
Figure 3. ISI 2002 Summary by region

REGION	SKATERS	STRIDERS	SPRINTERS	STROLLER
North America	14.3%	-	-	-
South America	-	-	7%	23%
Europe	50%	75%	31%	7%
Australia	35.7%	16%	6%	38%
All other regions	-	9%	19%	32%

Figure 4. e-Service Inhibitors

The key inhibitors to the development (or effectiveness) of digital governance/government in developing or underdeveloped nations	Percentage of Respondents
Lack of infrastructure	60%
Lack of resources	47%
Low level of ICT literacy	33%
Lack of awareness at policy level	20%
Low public incentives	27%
Low Internet penetration	20%

Figure 5. Barriers to Success of e-Service through Digital Government



The approach to electronic (digital) government and e-service within the New Zealand local government has been a collective integrated strategy – by establishing the New Zealand Local Government Online in 1997 (<http://www.localgovt.co.nz/LGOL>). Local Government Online Limited (LGOL) is a joint initiative of the Society of Local Government Managers (SOLGM) and the Association of Local Government Information Management (ALGIM). LGOL, owned jointly by SOLGM & ALGIM, owns the Website and offers Internet related services to the local government sector. These services are developed and operated under a collaborative approach that engages economies of scale in order to achieve cost and operational efficiencies and to encourage an integrated approach to the re-engineering of the supply and the value chain. LGOL’s current mission is “to help local government transform into e-local government through innovative leadership and by providing leading-edge services and facilities.”

The Website receives over 280,000 requests for information each month and mailing lists provided with services for Councils generate in the vicinity of 45,000 email enquiries and responses within the sector each week. LGOL offers the product ‘Community On Line,’ a template website carefully crafted to meet the e-government requirements of a local authority. Economies of scale have been engaged in order to be able to offer this product at a “cannot be refused” price with a monthly hosting and development charge to allow for continuing development and expansion into the e-commerce area. LGOL has established itself as the pre-eminent provider/facilitator of Internet services to the New Zealand local government with the Website acting as the primary portal to all local governments within New Zealand.

This pilot study (case study) of e-service from the users’ viewpoint was conducted after a review of a number of digital government cases (e.g. see [2], [5], [7], [14], [18],

[20], [31] and [17]).

In developing and rolling out e-service initiatives, it is essential to develop performance measures in order to assess progress, effectiveness and success. Performance measures should be developed with stakeholders’ input and should be documented and communicated to all parties involved. Performance measures can include: financial parameters (e.g. ROI), productivity factors and citizens’ satisfaction (better service), to name a few. This section of the paper concentrates on the citizens’ view of effectiveness with reference to the results of the study mentioned in Part (b) above.

As mentioned earlier, this section is based on a digital government and e-service project within the Canterbury region of New Zealand. This project reflects the trends in local governments worldwide - in the development of e-technology solutions so as to enhance communication and the information flow between governments and their citizens. The key objective of this particular project is to facilitate improved two-way exchange of information and to enhance its public image as a professional customer service oriented organisation.

The local government that initiated the project (referred to as the Council hereafter) seems to be conscious of distinguishing between political rhetoric and the reality of digital government – as demonstrated through measuring the success of the project on an ongoing basis. The performance measures that have been considered include:

- Website hits – which are monitored on an ongoing basis so as to determine the utilization of services
- Customer feedback through the service web sites
- Quantifiable efficiency benefits (e.g. cost savings, time savings, and service level impact and so on)

Overall, *Web-site hits* are not an effective measure of

usefulness and usability of a web site – unless it is combined with statistics concerning the number of users who actually proceed to access services past the *home page*. *Customer feedback* through service websites can be a more effective measure of user satisfaction. However, it would be beneficial to include feedback from other sources (e.g. phone calls). *Quantifiable efficiency benefits*, as a measure of success does not directly reflect public access to e-service.

A review of the electronic services delivery site indicates that the Council is an example of Stage 4 of the progression of digital government initiatives (as discussed in Section “Digital Government and e-Service: An Overview”).

E-services (and information) provided on the web site can be seen as being placed in two categories:

Providing Information:

- Current issues of significance (Hot Topics) – e.g. area plans, recent policy changes, annual report(s)
- General information with regards to services – rates information, street maps, rubbish collection, projects in various areas, jobs at the Council, forms, weather, library catalogue, Art Gallery, bus timetables, leisure centres and the link to govt.nz
- Specific Council information – about the mayor, councillors, community boards, council meetings, meeting agenda and proceedings, public notices, and newsletter
- Events – events calendar, tourism and visitors’ information, online guide to the city, clubs and groups

Communication and/or feedback:

Contact the Council, Ask us, Quick Answers and Have Your Say (feedback RE council projects)

A survey was conducted in order to assess public awareness and their views of the Council’s electronic service delivery initiatives. Sixty one percent of the participants were between 18 and 34 years, 26% were between 35-49 years and the rest were aged 50 years and over. It appeared that 76% of the respondents were aware of the digital governance services that are provided by the Council online.

Approximately 87% of the respondents who were already aware of the Council’s online services and 81% of those who previously did not know of the Council’s web site considered access to online services as being helpful.

It appeared that the majority of respondents (49%) were aware of the Council’s website through word of mouth – followed by Web surfing or search engines (32%) and advertising (19%).

Respondents seemed to have accessed library information, agencies’ hours of operation, and events in the city and city maps more frequently than other online information – as seen in Figure 6.

As you can observe from Figure 7, immediate access to information anytime and anywhere appeared to be the most important reason (77%) for the perceived usefulness of the Council’s digital government and e-service initiative.

On the issue of difficulties in using the Council’s web

site, 32% found the link to be slow whilst 8% could not locate the relevant information and 7% found the navigation to be complex.

Figure 6. Frequently Accessed Information

Type of Information Available	Percentage of Respondents
Library information/catalogue	42%
Services - hours of operations	38%
Events in the city	32%
Maps	31%
Community services/events	30%
Rates information	25%
Bus timetable	23%
Permits	13%
Art Gallery	12%
Job advertisements/applications	11%
Water resources	10%
Population statistics	7%

Figure 7. Reasons for Effectiveness

Reason for Effectiveness	Percentage of Respondents
Immediate access to information anytime/anywhere	77%
Time saving - no need for time consuming telephone calls and/or visiting the Council	55%
Access to relevant information with reasonable details (yet simple to follow)	40%
High level of usability	27%
Links to relevant pages/sites	25%
Easy to navigate	20%

Figure 8. Future e-Services Requested

Desired Online Services	Percentage of Respondents
Rate payments	37%
Online submission of applications (e.g. building permits, resource consents and so on)	30%
Multimedia streaming of local events	30%
Fee payments	27%
General Council related information	25%
Online voting facilities	23%
Interactive online services such as discussion groups and online forums	23%
No reply	6%

Many respondents expressed an interest in enhancing (broadening) the Council's online services to include rate payments and online transactions – as outlined in Figure 8.

Participants were asked to state their concerns about using online services. Results show data security is the greatest concern for customers (71%) – followed by concerns about confidentiality of data (66%); lack of appropriate technical infrastructure (24%); and document incompatibility (6%). It has to be noted that 19% of the participants expressed no concern at all in using online services.

The respondents rated the contents of the Council's e-service web site as 7.18 (out of 10 – with 10 being highly desirable). The quality of services that are being made available online was rated at 7.52. The rating for the value of access to online services in the public sector in general was 6.93.

In brief, even though the results of this pilot study are not to be considered as final, it appears that this particular e-service initiative is rated favorably.

It would appear that there is support for carrying out future digital government and e-service strategies based on the experience users have had from the Council's existing electronically delivered services. However, it should be noted that these results cannot be viewed as being applicable to other e-service solutions that are being provided in other countries.

VII. Summary and Conclusions

Within the past few years, much has been debated over the key factors that would impact upon the implementation of digital government and e-service strategies. Overall, practitioners and management scientists tend to agree that the trend for government transformation through e-technologies is irreversible. Yet there is also a danger. Technical innovation on its own is not enough to drive the development of e-service and digital government solutions. The potential benefits of e-technologies for improved service and better government can only materialise when the solutions are introduced as part of a strategically planned process, adequately supported environment for both citizens and businesses alike and with a focus on locally relevant objectives. Successful e-service initiatives through digital government need to:

- encompass the improvement of service delivery to the citizen, the creation of economic activity and the safeguarding of democracy.
- be orientated towards the citizen. The citizen does not need to be aware of who in the government provides the required service. That is to say, inter-agency and intergovernmental e-governance dimensions are essential.
- be made available to all citizens (not just to a minority who can afford to have access to the required electronic infrastructure).

- provide an opportunity for business process re-engineering of supply and value chains – merely automating existing services is inadequate and does not necessarily produce satisfactory results.
- provide opportunities to build viable and sustainable partnerships between the private and the public sectors - where each party would be responsible to provide e-capacity in order to achieve a competitive advantage.

This paper examined some of the parameters that influence the successful implementation of effective e-service and digital government solutions – including:

- The view of management, theoreticians and ICT practitioners with regards to the implications of digital government and e-service – ranging from the optimists who view digital government as being an effective tool (without any concerns) to those who view technology as a tool only (arguing that technology on its own cannot be a driving force for service effectiveness).
- The implications of the digital divide and e-readiness – the success of carrying out digital government strategies in a country rely on its state of digital readiness and the ways in which the barriers to the *digital divide* can be overcome.
- The citizens' view of experience with e-service initiatives – a pilot study of digital government within the Canterbury region of New Zealand indicated that local citizens rate digital government and e-service solutions as being effective. However, these results are not final and cannot be taken as being applicable to other digital government solutions introduced in other countries/regions.

In conclusion, access to the right technology for delivering e-service in the public sector is essential but insufficient. Even though most of the shortcomings (as they concern the effectiveness of digital government) can be resolved by improving the technology infrastructure, technology by itself does not necessarily result in better, more efficient, and service orientated government. Technological advancements are only effective if they are considered alongside other key parameters such as social structure; cultural values and attitudes; ethical considerations; business process re-engineering and the political culture within the public sector.

References

- [1] Accenture, "e-Government Leadership – Realizing the Vision," [online] <http://www.digitalopportunity.org>.
- [2] Accenture, "Governments Closing Gap Between Political Rhetoric and e-Government Reality," [online] http://www.accenture.com/xd/xd.asp?it=enWeb&xd=industries/government/gove_study.xml.
- [3] Asgarkhani, M. "e-Governance in Asia Pacific," Proceedings of the International Conference on Governance in Asia, Hong Kong, 2002.
- [4] Asgarkhani, M. "A Strategic Framework for Electronic Government," Proceedings of the 22nd National IT Conference, Sri Lanka, 2003.

- pp57-65.
- [5] Asgarkhani, M. "Electronic Service Delivery in Local Governments – A Strategic Tool for Service Quality Improvement in the Information Age," Proceedings of the International Symposium on Service Charters and Customer Satisfaction in Public Services, City University of Hong Kong, 2003.
- [6] Asgarkhani, M. "Digital Government and Social Inclusion – Hype or Reality?" Proceedings of the 7th International Conference of Human Service Information Technology Applications, Hong Kong, 2004.
- [7] Asgarkhani, M. "The Reality of e-Service in the Public Sector," Proceedings of the 2005 IEEE International Conference of e-Business, e-Commerce and e-Service (published on CD-ROM)
- [8] Asgarkhani, M. "The effectiveness of e-Service in the Public Sector: A Local Government Perspective." Proceedings of the 2005 European Conference on Electronic Government (published on CD-ROM)
- [9] Asgarkhani, M. "Digital Government and its Effectiveness in Public Management reform: A Local Government Perspective," Journal of Public management review, Vol. 7. No. 3, September 2005, pp 465-488.
- [10] Bhatnagar, S. and Dewan, A. "GYANDOOT PROJECT: ICT INITIATIVE IN THE DISTRICT OF DHAR, MADHYA PRADESH," [online] http://poverty.worldbank.org/files/14649_Gyandoot-web.pdf, 2001.
- [11] Bijker, W.E. "Of Bicycles, Bakelites and Bulbs: Toward a Theory of Sociotechnical Change," Inside Technology, Massachusetts Institute of Technology Press, Cambridge, Massachusetts, 1997.
- [12] COMNET-IT (2002) "Country Profiles of E-Governance," [online] <http://www.digitalopportunity.org>, 2002.
- [13] Heeks, R. "Reinventing Government in the Information age: International Practice in IT-enabled Public Sector Reform," 1999, Routledge, London.
- [14] Lin, M., Zhu, R., Hachigian, N. "Beijing's Business E-park", [online] http://www1.worldbank.org/publicsector/egov/zhongguancun_cs.htm, 2001.
- [15] Mackenzie, D., and Wajcman, J. "The Social Shaping of Technology: How the Refrigerator Got its Hum", Open University Press, 1985, Buckingham.
- [16] META Group, "The Global E-Economy Index," [online] <http://www.ecommercetimes.com>, 2000.
- [17] Mechling, G. and Vincent, C. "Defining and Measuring Success in Canadian Public Sector Electronic Service Delivery," [online] <http://www.nga.org/cda/files/MeasuringProgress.pdf>, 2001.
- [18] Orrego, C., Osorio, C., Mardones, R. "Chile's Government Procurement E-System," [online] http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm, 2000.
- [19] Raab, C. "Privacy, Information and Democracy, in Loader BD, ed, 1997, The Governance of Cyberspace: Politics, Technology and Global Restructuring," 1997, Routledge, London, pp155-174.
- [20] Radics, G.A. "Cristal: A Tool for Transparent Government in Argentina," [online] http://www1.worldbank.org/publicsector/egov/cristal_cs.htm, 2001.
- [21] Reschenthaler, G.B., and Thompson, F. "The Information Revolution and the New Public Management," Journal of Public Administration Research and Theory, Vol 6, No. 1, 1996, pp125-143.
- [22] Samaranyake, V. K. "The Reality of Digital Government," Proceedings of the 22nd National IT Conference, 2003, Sri Lanka, pp1-9.
- [23] Tapscott, D. "The Digital Media and the Reinvention of Government," Canadian Public Administration, 1997, 40, pp328-345.
- [24] The Commonwealth Centre for Electronic Governance – CCEG "Electronic Governance in Context," [online] http://www.electronicgov.net/pubs/research_papers/eged/chapter1.shtml, 2001.
- [25] The Commonwealth Centre for Electronic Governance – CCEG, "Current Issues In Relation To Developments in Privacy and Data Protection," [online] http://www.electronicgov.net/pubs/research_papers/eged/chapter5.shtml, 2001.
- [26] The Working Group on E-government in Developing World – WGEDW "Roadmap for E-government in Developing World," [online] <http://www.digitalopportunity.org>, 2002.
- [27] Gantz, J. "Information Societies Showing Olympic Stride," The Worldpaper Feb 2002, [online] <http://www.worldpaper.com/indexes/ISI/012002/TheWorldPaperISI2002.pdf>, 2002.
- [28] UN E-Government Report "Benchmarking E-Government: A Global Perspective-Assessing the UN member states," UN Publication, [online] <http://www.upan1.org/egovment2.asp>, 2001.
- [29] UNESCO/COMNET-IT "Global Survey of Online Governance," [online] <http://www.digitalopportunity.org>, 2000.
- [30] Webster, A. "Message Beyond the Medium," [online] www.audit-commission.gov.uk/publications/e-government2.shtml, 2001.
- [31] Wescott, C.G. "E-Government in the Asia-Pacific Region," UNPAN Asia Pacific, [online] <http://www.unpan.org>, 2001.
- [32] Wiener, N. "Cybernetics: The Emerging Science at the Edge of Order and Chaos," Simon and Schuster, New York, 1984.
- [33]. Workshop – Digital Divide – OECD "The Digital Divide: Enhancing Access to ICTs," [online] www.oecd.org/dataoecd/22/11/2428340.pdf, 2000.
- [34] Zuurmond, A. "From Bureaucracy to Infocracy: Are Democratic Institutions Lagging Behind?" Public Administration in an Information Age: a Handbook, IOS Press, 1988, Amsterdam, pp259-272.
- [35] Perri, G. "E-governance: Weber's Revenge?" Proceedings of the Annual Conference of the Political Studies Association, 2000.