e-Local Government in New Zealand: The Shifting Policymaker View

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Abstract: The New Zealand government has a strategy in place to establish an e-government infrastructure that is intended to allow citizens and government agencies to interact electronically. This paper reports the results of a longitudinal study designed to track the development of e-local government initiatives in New Zealand since 2000. Identical surveys conducted four years apart show heightened recognition by policy makers of sixteen key policy issues judged vital for e-government success; as well as increasing sophistication of local authority websites. The results also indicate that, while the majority of NZ e-government websites appear to have been created to provide information to citizens, there remain many opportunities to use such a vehicle strategically. It is anticipated these results will be of interest both to local and central government policy makers, and to other e-government researchers.

Keywords: governmental issues, e-government, local government, policy

1. Introduction

Although governments around the world administer a diverse array of services, long recognised is the potential for a common range of such IT-enabled activities. (Leach and Stewart, 1992) In New Zealand (NZ) the introduction of information and communication technologies to all aspects of government is now a priority, with electronic government (e-government) generally believed to be a cost-effective use of new technology to provide people with convenient access to government information and services, to improve the quality of services and to provide greater opportunities to participate in the democratic process. (NZSSC, 2003). The study of e-government has emerged as a distinct, multi-disciplinary research field in its own right. Within this field a particularly fruitful and worthy subject for investigation is the nature of developments in local e-government initiatives and the commensurate impacts on citizens. It is important to track progress towards a totally seamless e-government so that a level of consistency and appropriate control might be achieved, and with equitable services provided to citizens through the various interacting government agencies. This study contributes to such monitoring by presenting a longitudinal record of the evolution of e-local government in NZ. A comprehensive questionnaire was sent to every NZ local authority in December 2000, and again in December 2004. At one level the survey was designed to reveal the sophistication of local authority websites in terms of the features they contain; another level sought to understand the rationale behind the web sites in terms of the formal and informal policies guiding their development.

By comparing longitudinal survey results it was possible to gain an appreciation of the nature and speed of evolution of e-local government in NZ, and to highlight areas of improved sophistication and performance that should be promulgated to policy makers for their own consideration. It is anticipated these results will be of interest both to local and central government policy makers, and to other e-government researchers.

2. Theoretical basis of research

Since 2000 a wealth of data has become available with which to compare e-government performance at the national level, e.g. (Basu, 2004; Teicher and Dow, 2002; Griffin and Halpin, 2002; Turner and Higgs, 2003; Ke and Kee Wei, 2004). This data consistently indicates that progress is being maintained in many areas, although global development is somewhat piecemeal and can be inconsistent. For example, in Australia, e-government service is largely focused at information-only provision and its spread is uneven, especially in rural and remote areas. Australia, like NZ, has a low-density population and its rural citizens have different needs to those of city dwellers, e.g. Teicher and Dow (2002). Teicher and Dow also reported that Australia in 2002 had a proliferation of portals, rather than a desirable single entry point to government organisations and entities. Similarly in the UK, while some local government websites demonstrated significant levels of sophistication, the majority were still at an emerging phase. (Griffin and Halpin, 2002).

Singapore might be considered the perfect geographical setting for e-government, having a compact landmass of just 640 square kilometres.

Indeed it was one of the first countries to develop an integrated and coherent approach to computerising its government (Ke and Kee Wei, 2004), and is currently working towards customisation of its service to enable one-to-one relationships between government and citizens. Like Singapore, NZ has long been considered a good performer in terms of its e-government activities. A 2001 survey of the proportion of (central) government sites with fully online services, indicated that NZ (with 48 percent) was placed fifth, behind first-placed Taiwan (65 percent), but well ahead of the higher profile e-governments of the USA (34 percent) and the UK (30 percent). (Global E-Government Survey, 2001). E-government can be considered a disruptive technology (Christensen, 1997) and a major challenge is how to measure the progress of its implementation. (Noordegraaf and Abma, 2003)

For example it is questionable whether citizens, who are the primary stakeholders, even have the skills or would be willing to measure e-government progress. (Griffin and Halpin, 2005) From an extensive review of the US-based literature the authors developed a framework that captured the major e-government issues, and this framework underpinned the 2000 survey instrument. (Deakins et al., 2001; Deakins and Dillon, 2002) While acknowledging that other countries also have a huge amount of e-government literature and resources, such as the Australian Government and Information Management Office (AGIMO) (http://www.agimo.gov.au), the USA was chosen because of its advanced state of e-government at the time, and its dominance of the e-government literature.

The developed framework, which is shown in Figure 1, comprises sixteen key issues that must be addressed by e-government policymakers if e-government is to be successful. These issues were grouped into six related areas: Worth, Access, Relationships, Regulation, Protection, and Societal. Further investigation revealed that a number of these areas required modification for the NZ environment: Access (Accessibility, Digital Divide, Indigenous Peoples), Relationships (Consumer Confidence, Private Sector, Trust), Regulation (Taxation, Legislation), and Societal (The IT Workforce).
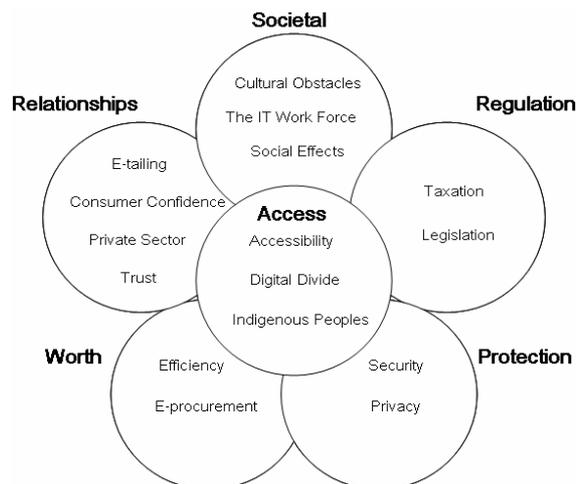

Figure 1: Key issues for the creation of e-government in the USA (Deakins et al., 2001)

3. Research methodology

NZ is administered at the regional and local level by 86 administrative bodies. Twelve regional councils are responsible for resource management, biosecurity, catchment control, harbour administration, regional civil defence, and regional land transport while the remainder, being city and district councils, are concerned with community well-being and development, environmental health and safety and infrastructural services such as sewerage, water, roading, etc. In 2004, as in 2000, a mail survey was formed around the 16 identified issues and sent to the Chief Executive/General Manager of every regional and local authority in NZ.

The purpose of the study was outlined to each addressee, who was asked to forward the survey to the individual within the organisation with the most direct involvement in e-government policy development. Such development is likely to involve determining how information-based services (predominantly) might be enhanced through website and e-commerce technologies. Reminders were sent after three weeks if necessary. In the first survey in 2000, 49 usable responses were received from the 86 local and regional authorities contacted, representing a response rate of 57 percent. In the second survey in 2004, 51 usable responses being received, which equated to a slightly increased response rate of 59 percent.

4. Results

4.1 Key demographics

Table 1 provides a demographic comparison of the survey respondents.

Table 1: Population demographics

	2000 (%)	2004 (%)	Change (%)
No. of employees			
0-59	33	30	-3
60-100	16	19	+3
>100	51	57	+6
Population base			
0-50,000	64	62	-2
50,001-100,000	12	14	+2
100,001-200,000	10	10	0
>200,000	14	14	0
Annual expenditure (NZ$ million)			
<10	8	15	+7
10-50	74	55	-19
51-100	8	20	+12
>100	10	10	0
Website expenditure (NZ$)			
<5,000	54	12	-42
5,000-9,999	14	17	+3
10,000-50,000	21	48	+27
>50,000	11	23	+12

It can be seen that the size of local and regional authorities has generally increased (number of employees), -perhaps in line with the population bases of the participating authorities, which has shown a similar upward trend. In 2000, 74 percent of participating authorities stated that their annual (total) expenditure was NZ$10-50 million and this proportion decreased to 55 percent in 2004. A higher proportion of smaller local authorities participating in the 2004 study can perhaps explain such a marked change, which is accompanied by an 88 percent increase in authorities claiming annual expenditures of less than NZ $10 million. The dramatic increase in the number of authorities in the NZ$51-100 million annual expenditure range can also perhaps be explained by similar variations in the demographics of the (responding) authorities. In 2000, 8 percent of local authorities were still developing their website and 69 percent of responding local authorities had a live website. Four years on and 96 percent of NZ local and regional authorities reported having an operational website. The website expenditure figures are particularly interesting since it might have been expected that a large one-off investment to establish an e-government presence would be followed by reduced ongoing website maintenance costs. In reality, the proportion of local authorities spending less than NZ$5000 per annum has dropped to 12 percent (from over 50 percent) while those spending more than NZ$10,000 has more than doubled, from 32 percent to 71 percent.

4.2 Website features

Both surveys required the respondents to report the presence of 21 ideal e-government website features that were based on criteria from The Oultwood Local Government Web Site Index (Oultwood, 2000), which synthesises the best features of local government websites across Australia, Canada, Eire, New Zealand, South Africa, the US, and the UK. Table 2 shows the percentage of NZ local authority websites where a feature is reported to be present.

Table 2: Website features

Ref.	Feature	2000 (%)	2004 (%)	Change (%)
1	Search engine	59	100	+41
2	Council's responsibilities	85	100	+15
3	Downloadable documents and forms	85	100	+15
4	Local panoramas/aerial photos	44	92	+48
5	Site navigation help	47	92	+45
6	Events diary	65	92	+27
7	Frequently Asked Questions (FAQs)	32	85	+53
8	Local tax collection	3	69	+66
9	Web-visitor survey	24	69	+45
10	Fast loading web pages	76	69	-7
11	Press releases	79	69	-10
12	Highway web cameras	6	54	+48
13	GIS (mapping)	21	54	+33
14	Minutes archive	38	54	+16
15	Simple web pages	88	50	-38
16	Virtual tours	6	38	+32
17	Telephone directories	47	38	-9
18	Library catalogue, reservation, renewal	18	33	+15
19	Cemetery index	3	31	+28
20	Online bill payments	0	15	+15
21	E-tailing	3	0	-3

These values are also represented graphically in Figure 2, where increases in most of the desirable Oultwood features can be readily appreciated. For example, every responding authority reported the presence of a search engine, a description of their responsibilities and downloadable documents and forms. Other features (Ref. 4 – 6 in the table) are

also present on the majority of sites, with the most significant increase since 2000 being websites featuring local tax collection (3 percent in 2000 rising to 69 percent in 2004). This was expected, as over 20 percent of respondents without a website in 2000 stated that tax collection was one of the intended features of their planned site. (Deakins and Dillon, 2002) Given these

respondents were also the late adopters, it is unsurprising that the others too have begun to collect tax revenue via their websites. Although the specific nature of the tax (or rates) collection is not known it indicates a strong development in terms of transactional activities now occurring via NZ local authority websites
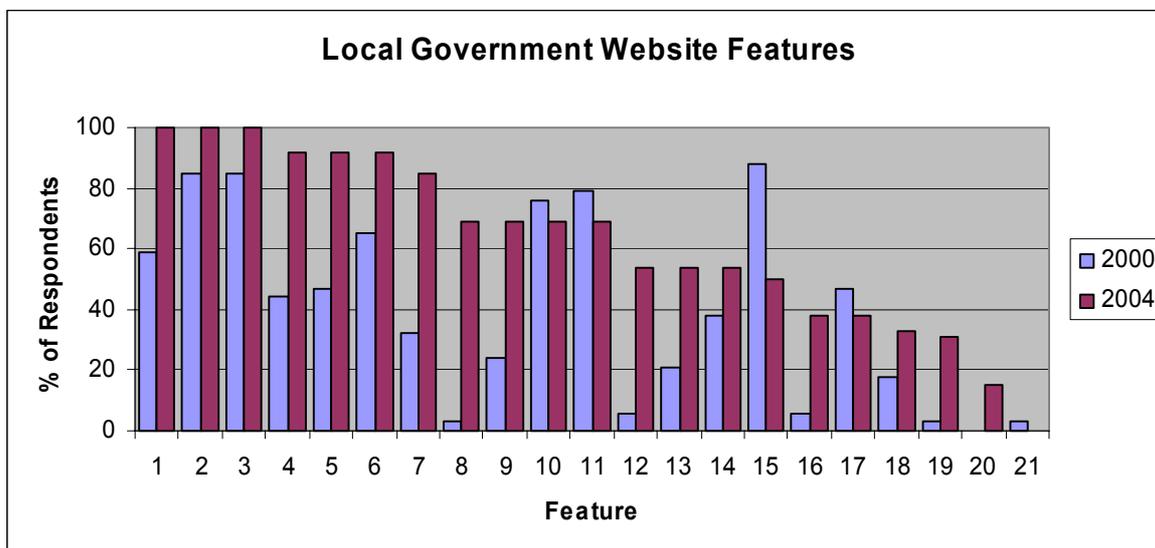
Figure 2: Local government website features

4.3 The policymaker's view of e-government issues

In this section the significance of each of the sixteen key e-government issues identified in Figure 1, is evaluated through the eyes of the Local Authority e-government policymakers. Statements in the survey generally took the form: "Please indicate [on a 6 point Likert scale, with anchors: 0 = Don't know, 1 = Not at all, 3 = Somewhat, and 5 = To a Large Extent]… the extent that you would consider [Issue] when developing or maintaining your website." An intention of the first study was to assess the level of knowledge respondents had of the sixteen key issues; hence, respondents were not given definitions of a number of e-commerce-related terms (such as Digital Divide, E-procurement…) and were asked to respond based on their current level of understanding of such terms. Expectation of a reasonable understanding of terms and issues was not well supported by the results in 2000. For example, 17 percent of respondents were unfamiliar with the term 'E-procurement', 20 percent appeared unfamiliar with the term 'Digital Divide', 17 percent were unable to relate the issue of 'Taxation' to their own e-government initiative and, similarly, 'E-tailing' was not understood by 14 percent of respondents. In the 2004 survey, respondents were provided with clear definitions of a number of e-commerce related terminologies to avoid confusion when answering the survey.

4.3.1 Issues of worth

By 2000 many businesses, government authorities, and citizens had already agreed that e-commerce could improve Efficiency in government departments by providing citizens with relatively inexpensive, real time access to consistent transaction facilities. This view is confirmed in Figure 3a, which shows that a key reason for respondents wishing to have a website is the gains in efficiency that it will bring (the lightly shaded bars are the values for 2000). In 2004 this trend continued, with even more local authorities appreciating the potential efficiency gains of an e-commerce website.

Similarly, developing an e-government presence can save time and money through the adoption of E-procurement, which creates the potential for savings on bulk purchase pricing and transaction costs. Figure 3b shows that, in 2000, approximately 14 percent of respondents were unaware of these e-procurement advantages. Even in those cases where an understanding of e-procurement was signalled, only 53 percent indicated that they rated its significance as being 'Somewhat' or higher, i.e. rated the extent they would consider it when developing or maintaining a website. In 2004, Figure 3b indicates that approximately 9 percent of respondents may still be unaware value of e-procurement benefits.
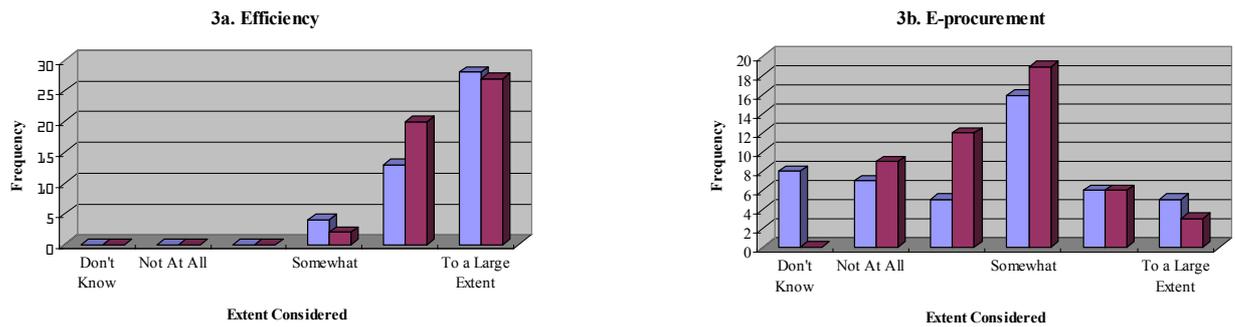
3a. Efficiency

3b. E-procurement

Figure 3: Worth issues

4.3.2 Issues of access

Regardless of central government initiatives, e-government will only be successful when access to the Internet is widespread and available to every citizen. In the 2000 study, accessibility was felt to be a significant issue when developing and maintaining a Local Authority website, Figure 4a, and there was a growing awareness in 2004. In 2000 there was a wide range of opinion on the subject of the Digital Divide although 80 percent of respondents claimed to understand the issue. At the time this was thought to be indicative either of socio-economic differences across the districts served by the Local Authority or differences in bandwidth availability, Figure 4b. By 2004 around

5 percent reported that they did not understood the Digital Divide concept, and with a further 55 percent or so of respondents being conscious of Digital Divide issues impacting e-government accessibility. It is desirable that local governments are aware of indigenous peoples' difficulties. While 74 percent of respondents did rate this as being of 'Somewhat' or higher significance in 2000, a clear majority of respondents indicated that they rated the needs of Indigenous Peoples as being only of 'Somewhat' significance, Figure 4c. Although 67 percent of respondents in 2004 rated this issue as being of 'Somewhat' or higher significance, overall there remains a mixed picture of its recognition.
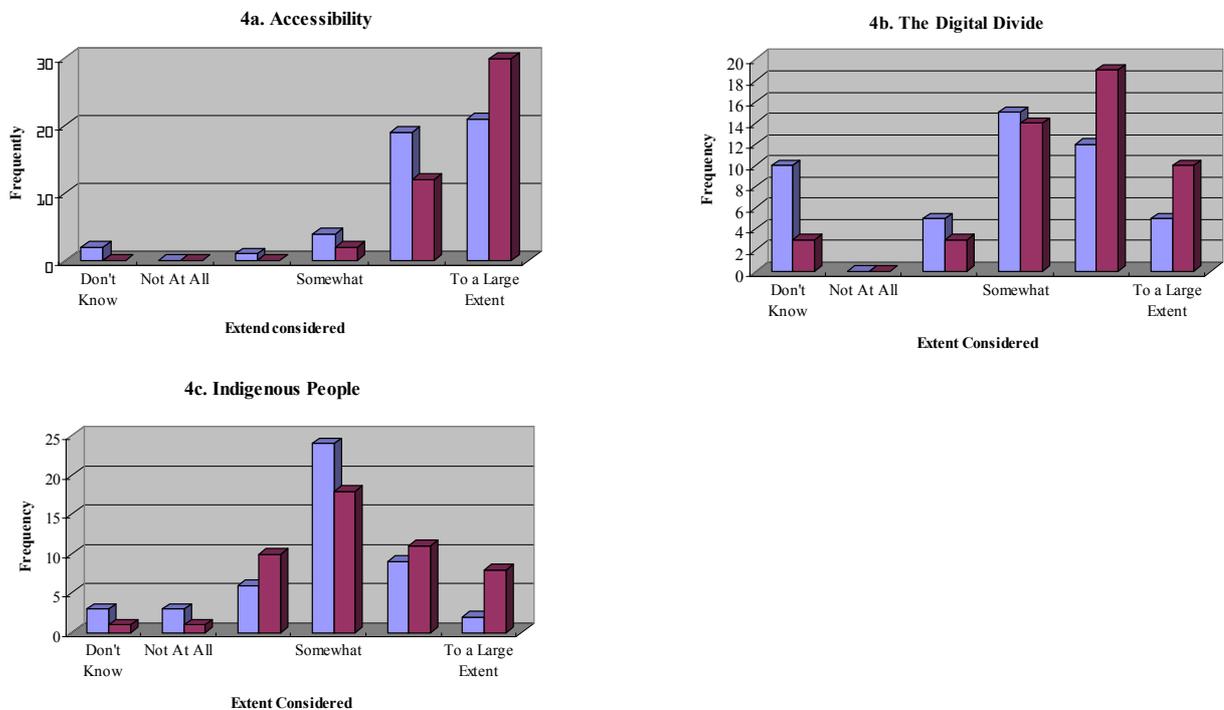
4a. Accessibility

4b. The Digital Divide

4c. Indigenous People

Figure 4: Access issues

4.3.3 Issues of relationships

Ultimately, the NZ government wishes to have partnerships with businesses in the Private Sector because globally this is the area in which electronic retailing (E-tailing) is growing rapidly. It was interesting that, in 2000, both a lack of understanding of E-tailing and an overall low significance rating by respondents was noted, Figure 5a. The 2004 values indicate that many respondents still lack understanding of e-tailing although this is showing some signs of increasing. Similar to the USA position, the NZ government has much to gain from obtaining the support and feedback of businesses in the Private Sector

before e-government services are implemented. Figure 5b indicates that 48 percent of respondents rated the significance as being 'Somewhat' or higher in 2004, a significant increase over the 2000 situation. Consumer Confidence and Trust in performing online transactions is critical to the success of this new commerce medium. Figures 5c and 5d both confirm the view that consumer confidence and trust were, and remain, significant issues for Local Authority policymakers when they implement and maintain a website. Sensitivity to these issues may also be a reflection of the 'public good' environment in which local government staff operates.
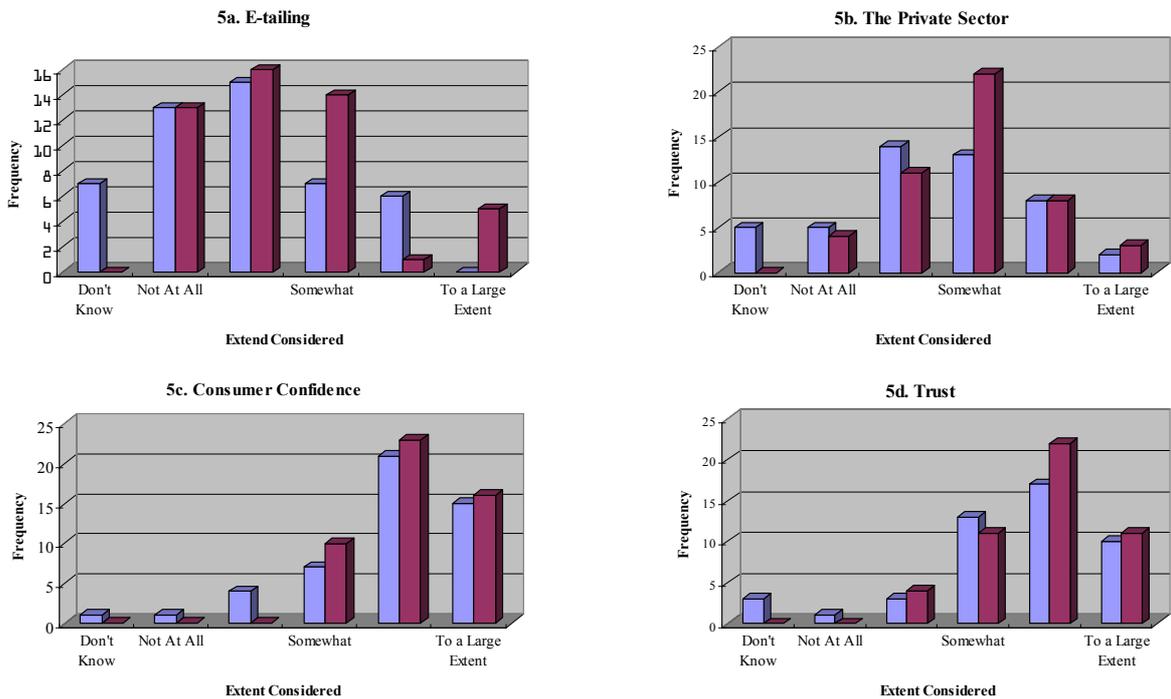

Figure 5: Relationship issues

4.3.4 Issues of regulation

The NZ government continues to introduce Legislation such as the Electronic Transactions Act. Figure 6a indicates that policymakers in 2000 believed legislation to be a significant issue when implementing e-government, which again may be a reflection of the environment in which local government staff operates. This trend continued in 2004, with approximately 68 percent of respondents having strong awareness of the Legislation issue. The subject of Taxation of the

Internet is at the forefront of international e-commerce legislation debate. Interestingly, the convenience that would be afforded by online collection of local taxes was either not recognised or was not considered by many of the local bodies in 2000, see Figure 6b. The attitude of local authorities appears to have changed somewhat with more authorities reporting that they would give some consideration to online local tax collection.
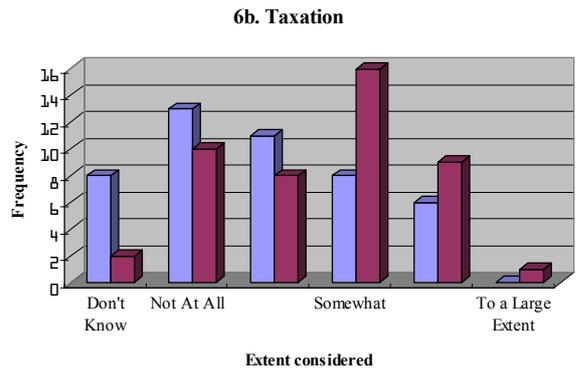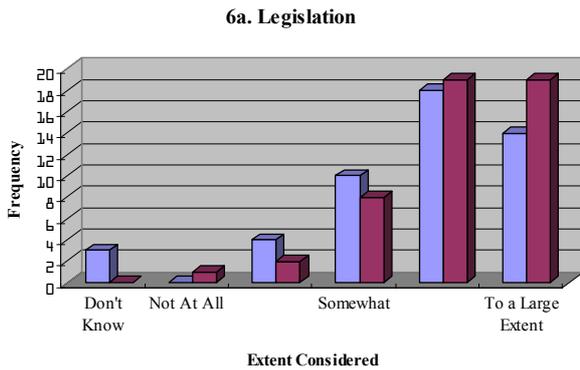
6a. Legislation

6b. Taxation

Figure 6: Regulation issues

4.3.5 Issues of protection

Issues of Security and Privacy are important because citizens can doubt the security of the information they provide over the Internet. Figures 7a and 7b both indicate that many Local Authorities were aware of these issues even before 2000, and rated them as being significant.

In the case of security, around 40 percent of respondents reported they considered it to a large extent in 2004, a far higher percentage than in 2000. In contrast, the attention given to the privacy issue appears to have not changed significantly since 2000.
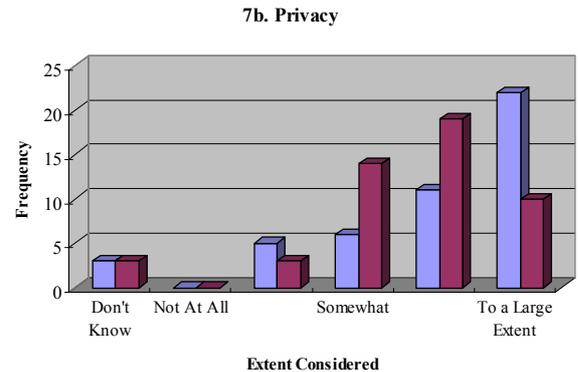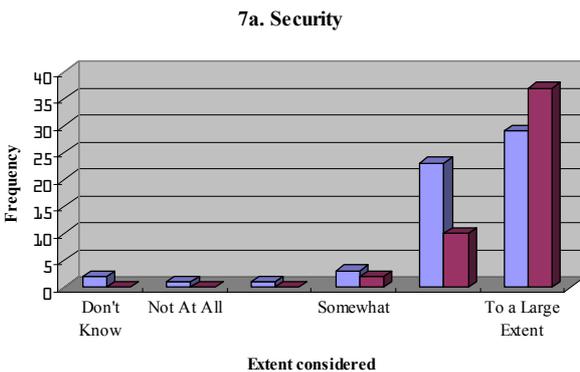
7a. Security

7b. Privacy

Figure 7: Protection issues

4.3.6 Societal Issues

When publishing information about different ethnic groups on a website, local government officers need to be aware of the cultural sensitivity attached to such information. This issue was not explicitly tested in the survey as it was judged to be part of the Indigenous Peoples issue. The earlier Figure 4c showed that the majority of respondents rated the needs of the ethnic group Indigenous Peoples to be only of 'Somewhat' significance. The redefinition of the workplace can create (internal) cultural obstacles that influence the success of e-government implementation. Figure 8a indicates that internal culture was considered a reasonably significant issue in 2000, a feeling heightened further in 2004. In 2000 NZ

was also experiencing a shortage of technical IT graduates and Figure 8b shows that the quality of the internal IT workforce was a significant issue for many respondents when deciding to implement a website; this situation had eased somewhat by 2004.

Finally, respondents were asked to what extent they considered Social Effects when developing their websites. Figure 8c indicates that, in 2000, 19 percent of respondents did not understand what the desirable and undesirable social effects might be, and overall did not feel strongly that this was an important issue for them to address; this situation had also improved somewhat by 2004.
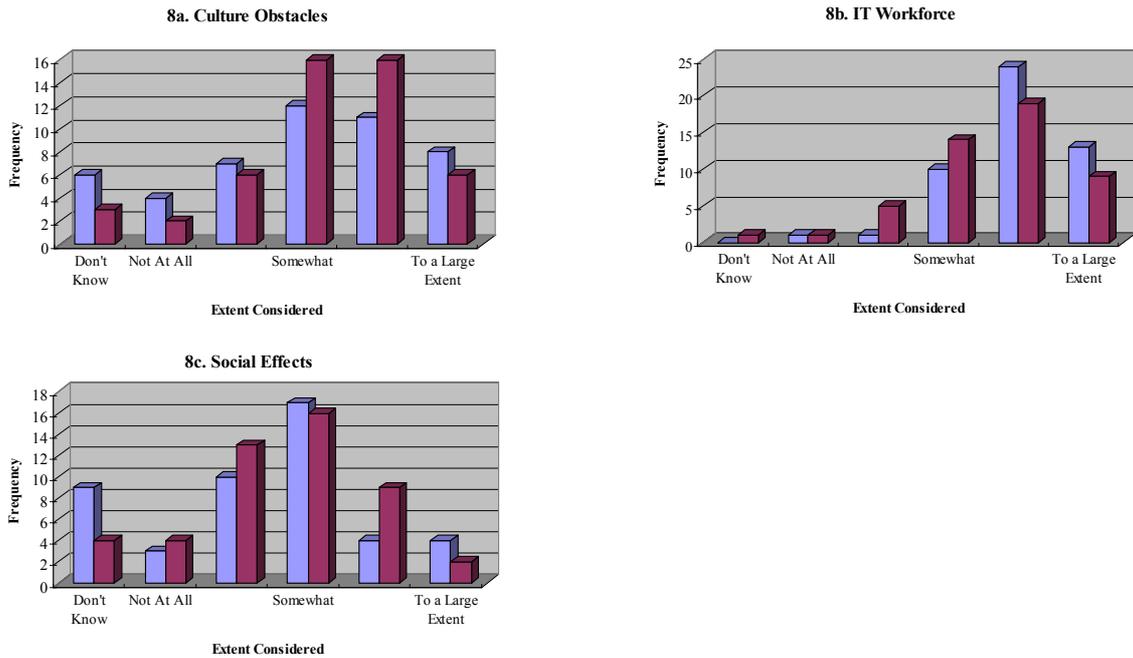
8a. Culture Obstacles

8b. IT Workforce

8c. Social Effects

Figure 8: Societal issues

5. Discussion

This longitudinal study has tracked the evolution of e-local government in New Zealand across the years 2000-2004 and has uncovered a number of interesting developments. Currently, almost every local authority has an operational website and also spends significant amounts on maintaining the virtual presence. Sixteen out of twenty-one desirable Oultwood Local Government Web Site Index features showed increased incidence, with local tax collection being the most marked (a 66 percent increase, to 69 percent of responding organisations). The 2000 study highlighted the significance that respondents accorded to sixteen key policy issues judged by the authors to be vital to e-government success. Six of the sixteen key issues (E-procurement, Digital Divide, E-tailing, Taxation, Cultural Obstacles, Social Effects) were not well understood by local e-government policymakers in spite of strong central NZ government promotion. There was good demonstrated support for eight of the sixteen key issues (Efficiency, Accessibility, Consumer Confidence, Trust, Legislation, Security, Privacy, IT Workforce) while, in contrast, four of the sixteen key issues (E-procurement, Indigenous Peoples, E-tailing, Taxation) were not considered to be significant issues by NZ local government policymakers, and the remaining four had a mixed basis for support (Digital Divide, Private Sector, Cultural Obstacles, Social Effects). These key issues remain relevant today and the 2004 results indicate some changes in the views of policy makers, with a marked overall improvement in the understanding of the terms being used. Issues of

Security, Legislation and the potential of e-government as a taxation-gathering tool received increased recognition by policy makers in 2004. This research has shown that NZ Local Authority websites now display some consistency of good website design and authorities have realised the value of publishing information to the web, although apparently at the expense of receiving information from citizens and achieving true e-democracy. For example, while every local authority website today publishes details of Council's responsibilities and provides a search engine and downloadable documents and forms, and many display local panoramas, aerial photos and virtual tours, thus far only two-thirds of sites offer a web-visitor survey. Hence, it would appear that electronic voting is still some way off.

Overall, few Local Authorities in NZ are prepared to buck the trend of providing online services and most appear to be following the 'Follower' migration path described by De Kare-Silver (1998), Figure 9. This path involves:

- Providing a wide range of Local Authority information, with no change to traditional operations.
- Monitoring and responding to increased citizen interest in electronic government and perhaps offering some functionality via the Internet, again with no change to traditional operations.
- Experimenting with electronic government as an alternative distribution channel for information and Local Authority services.
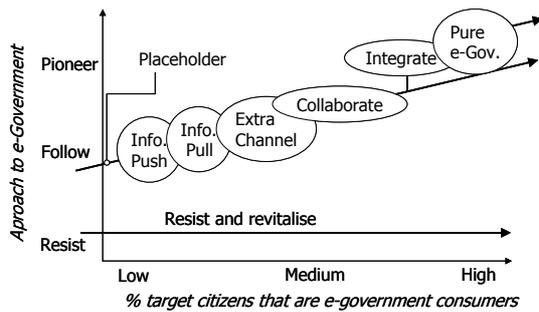
Figure 9: Evolution of e-government (modified from de kare-silver (1998))

Yet there are further opportunities for local government authorities to use e-government strategically. Depending on the size of the target audience and the attitude taken to e-government by policymakers (e-government resistor, follower, or pioneer), the website can be used to progressively):

- Experiment with electronic government as an alternative distribution channel for information and Local Authority services.

- Enable risk sharing and a more collaborative relationship with contractor and preferred supplier firms. No change to traditional operations.

- Recognise the continued importance of a physical presence and provide integrated and complementary channels to satisfy citizens on all fronts.

- Switch fully to become a dedicated electronic government by reducing physical sites as electronic operation grows.

A study of this scope inevitably has its limitations and the major limitation of the present study is that a 100 percent response rate from policymakers was not achieved, giving incomplete snapshots of the local e-government scene in 2000 and 2004. The fact that the responding organisations are likely to be different also makes direct comparisons questionable. While this research has answered some questions, many more merit future investigation. For example, how is e-government being used for gathering taxation revenue? How is e-government impacting employees? And, how are citizens reacting to e-government?

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