

# A Comparison between E-Government Practices in Taiwan and New Zealand

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**ABSTRACT :** Few studies have focused on comparing the state of e-government in Western- and Non-Western settings, where the political, social, economic, and cultural environments can be markedly different. This paper compares the views of local authority policymakers in Taiwan and New Zealand, in order to judge the sophistication of their e-government initiatives via the formal and informal policies underpinning website development.

Good levels of agreement were observed between the Taiwanese and New Zealander respondents for the high levels of significance they attached to 3 key issues, which the authors argue are critical for successful e-government: *Accessibility*, *Security* and *Privacy*. Similarly, the policymakers agreed on a medium level of significance for the 7 key issues: *E-procurement*, *Digital Divide*, *Private Sector*, *Taxation*, *Cultural Obstacles*, *IT Workforce*, and *Social Effects* (and on a low level of significance for *E-tailing*). It was concluded that government policymakers in both countries, in an era of commercial online social networking, are continuing to favor pushing (what they deem to be important) information to citizens, rather than creating collaborative service channels with citizens, contractors and suppliers or integrating separate service processes to satisfy all stakeholders. An attendant lack of commitment to promoting heightened (e-) democracy was also noted, especially in New Zealand.

**Keywords :** E-government, International Comparison, Taiwan government, New Zealand government.

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## 1. INTRODUCTION

E-government can be simply defined as the use of information and communication technologies by public sector organizations (Heeks, 2006), and governments around the world are facing unprecedented opportunities and challenges regarding management of their information and service interactions. While the commoditization of information and communication technologies (ICT) coupled with Web 2.0 trends and technologies present a plethora of possible solutions, the pace of change is such that few governments and large corporations are able to keep up with it (G2TT, 2007).

It is important to track progress towards totally seamless electronic government (e-government) in order that a level of consistency and appropriate control might be achieved, and with equitable services provided to citizens through interacting government agencies. E-government policymakers in particular want to know how a country or agency has performed in some e-government ranking in comparative terms, which can assist in setting prospective e-government strategic decision making. Citizens, civil society organizations, and opposition politicians may also be interested in holding governments and their agencies to account for the resources they have invested in e-government (Heeks, 2006). This study contributes to the monitoring and benchmarking of e-government by presenting a snapshot of e-government practices in Taiwan in 2005 and comparing the results with those obtained from a similar study in New Zealand.

Although e-government has been studied since it first appeared in the early 1990s, little work has been focused on the differences between Western- and Non-Western settings, where the political, social, economic, and cultural environments can be markedly different. The Taiwan and New Zealand studies used a survey questionnaire developed by the authors (Deakins et al., 2001; Deakins & Dillon, 2002) to obtain data from local public organizations, in order to judge the sophistication of their e-government initiatives via the formal and informal policies underpinning website development. The results provide a valuable and useful resource for e-government researchers and practitioners because:

1. Key features of actual Taiwanese and New Zealand e-government websites are evaluated, backed by the personal opinion of the directing policymakers.
2. The significance of 15 key e-government issues is evaluated in a Western and Non-Western context, enabling international comparisons to be made.

## 2. Literature Review

Development of e-government was originally driven by the commercialization of the Internet (Corbett, 2004; Weerakkody & Choudrie, 2005). In principle, e-government enables citizens and other stakeholders to access information from anywhere at anytime; improving efficiency by reducing service times and costs; providing convenient delivery of services and furthering interactions with industry, other government institutions, suppliers and customers (Basu, 2004; Holmes, 2001; Gichoya, 2005). When allied with inexpensive browser technologies, e-government has been observed to change the interactions between public organizations and customers and citizens (Holmes, 2001), -by integrating operations and structure and improving services (Choudrie & Lee, 2004; Pavliche, 2004). Schelin (2004) also reported that the introduction of e-government modifies the demands made on staff and citizens, leading to task reorientations such as answering emails rather than face to face contact and phone contact.

Since the early 2000s a wealth of data has become available with which to compare country performance in international terms (e.g., Basu, 2004; Teicher et al., 2002; Griffin et al., 2004). A consistent finding from these studies is that, while progress is being maintained in many areas, global development has been somewhat piecemeal and inconsistent.

### 2.1 E-Government in Taiwan

Taiwan is a country that is often associated with Internet-based innovation, in particular with the development of e-government technologies and services. Since the 1980s the Taiwan government has endeavored to automate and computerize the public sector in anticipation of improved operational procedures, service efficiency and quality, service cost reduction, and provision of innovative and convenient services to the private sector and to individual citizens (Lee, 2003). As early as 1997, the Research Development and Evaluation Commission (RDEC) initiated the establishment of the government's 'backbone network', otherwise known as the Government Service Network (GSN). In the same year the national government of Taiwan announced the National Information Infrastructure (NII), which was aimed at developing national ICT and upgrading Taiwan to a telecommunications hub in the Asia-Pacific region (Wang, 1999). In addition, all Taiwanese government agencies were encouraged to establish their own e-government websites so as to provide both the provision of information and (at the time) revolutionary services such as e-procurement and e-taxation. In March 2001 the government established the National Information and Communications Initiative Committee (NICI), by merging the NII Steering Committee with other governmental committees, with the purpose of promoting and developing the ICT infrastructure, e-government and e-industry in Taiwan. Taiwan's first 'Electronic Government Program' was established in April 2001 and was aimed at linking all government agencies through networking and providing such versatile Internet-based services as the 'e-government' system (RDEC, 2003). The 'E-government Entry Point of Taiwan' (<http://www.gov.tw>) is a

centralized government portal that integrates all online government services and information. In addition to search engines, phone books, public opinion mailboxes, personal web pages and real-time government agency news, hundreds of application forms are available for downloading and online application services are offered. This portal also provides basic services for government agencies including electronic certificates, payment methods, form generators, and work flow utility systems to speed the development of online application services.

In October 2001 Taiwan was ranked in second place (out of 196 countries) on its progress towards government digitalization, -second only to the USA (WMRC, 2001). Two years later it was ranked in first place in terms of information availability, citizen access, portal access, databases, and service delivery (West, 2006).

According to the International Council for Information Technology in Government Administration (ICA, 2004), Taiwan e-government development progress was enhanced in May 2004 by further integrating systems and deploying online digital applications.

The Government Service Network (GSN) is a broadband network system developed to link all government organizations and agencies that aims to promote the establishment of government agency websites and encourages citizens to access government service points nationwide (RDEC, 2002). In terms of promoting the establishment of government agency websites, 92 percent of government agencies had established websites as of March 2004 (ICA, 2004).

To encourage citizens to use computers and the Internet, the government set up a single website to integrate villages and boroughs (<http://village.gov.tw>); as of March 2004, information services and website links to 7843 villages and boroughs had been provided (ICA, 2004). In 2003, in an attempt to alleviate the digital divide between urban and rural areas, the government introduced telecasters to promote Internet use and information training to local communities in remote areas.

The electronic exchange of official documents began on a trial basis in July 2000 so that, today, all government agencies have implemented electronic official document exchange. The government has also installed the ‘Government Procurement System’ and established the online ‘Government Procurement Information Center’ to provide contractors with government e-procurement services. This system offers a database of unsatisfactory contractors, requests contractors’ reference data, and solicits proposals or written price quotations (ICA, 2004). In addition, an online bidding system and online vendor catalog and price inquiry/quotation system were set up to promote fairer competition.

The government has also developed an integrated online taxation system that is intended to provide businesses and the public with faster and more responsive tax services. To respond to rapid information-age developments, the government is also progressing the ‘e-Taiwan’ project, which will run through to 2008 and is anticipated

to perform the following seven tasks (RDEC, 2003):

- Connect all government agencies to the Internet
- Enrich the contents of Internet-based government information and resources
- Expand government information channels
- Promote Internet based government application services
- Consolidate government information security management
- Review government information related to legislation and regulations
- Enhance the Internet application competency of the government workforce
- Enhance electronic government promotion and IT human resources allocation
- Expand the government's IT budget

## 2.2 E-Government in New Zealand

In 1999, around the same time as Taiwan, the national government in New Zealand launched its first 'Electronic Government Program' having as its vision New Zealand as a world leader in e-government. Similar to Taiwan it anticipated improved services, cost effectiveness and efficiency, reputation and citizen participation. In 2002, the 'E-government Entry Portal Point of New Zealand' ([www.govt.nz](http://www.govt.nz)) was launched. This provided a citizen-focused 'front door' to a wide range of central and local government information and services (NZSSC, 2001). Today, this web portal allows New Zealanders to gain access to government information and services via use of the Internet, telephone, and other emerging technologies (Boyle, 2000). Progress with e-government over the intervening years has seen four major achievements (NZSSC, 2003):

### 2.2.1 Metadata and the government portal

The government web portal enables citizens to easily access links to all agency websites; 24 hours a day, seven days a week. By June 2004, people could use it to access information on 307 agencies, 1541 services, and 2774 documents (NZSSC, 2004). Local government services and information are also available through the portal.

The establishment of a metadata framework was central to portal design since it allows agencies to describe their information and service consistently, and helps them to find information via the portal (NZSSC, 2004). Reusing the information creates time, money and operating costs saving for agencies.

## 2.2.2 Interoperability

The New Zealand e-government interoperability framework (NZ e-GIF) sets out the policies, guidelines and technical standards to use for sharing and integrating data and information, and supporting information systems or business processes (NZSSC, 2003). The e-GIF produces three major benefits: helping government agencies to work together easily, allowing systems, knowledge, and experience to be shared between agencies and reducing the effort required when dealing with online government by encouraging a consistent approach. Agencies are required to adopt the e-GIF and observe its standards when selecting and implementing new IT systems; local government organizations are also encouraged to use it (NZSSC, 2004).

## 2.2.3 Authentication

Authentication is a process of verifying a user's identity and establishing the authenticity of the agency, so that government agencies and citizens can be confident of each other's identity; it also ensures that consistency, privacy, security requirements and cost effectiveness across government are achieved (NZSSC, 2004). In 2002, Cabinet approved a set of policy and implementation principles for authentication, which were used to develop four conceptual models to represent possible approaches to achieve online authentication (NZSSC, 2004).

## 2.2.4 Procurement

The government online procurement system (GoProcure) was initiated in November 2002, aimed at improving the efficiency of government purchasing through enhanced collaboration between government agencies (NZSSC, 2003). It also opened government projects to bids from many organizations, potentially reducing incidences of fraud and aiding transaction transparency.

In light of the above many public sector agencies have continued to upgrade their own online service, including the Inland Revenue Department (IRD), Land Information New Zealand (LINZ), Parliamentary Counsel Office (PCO), Department of Conservation (DOC), and the New Zealand Immigration Service (NZIS).

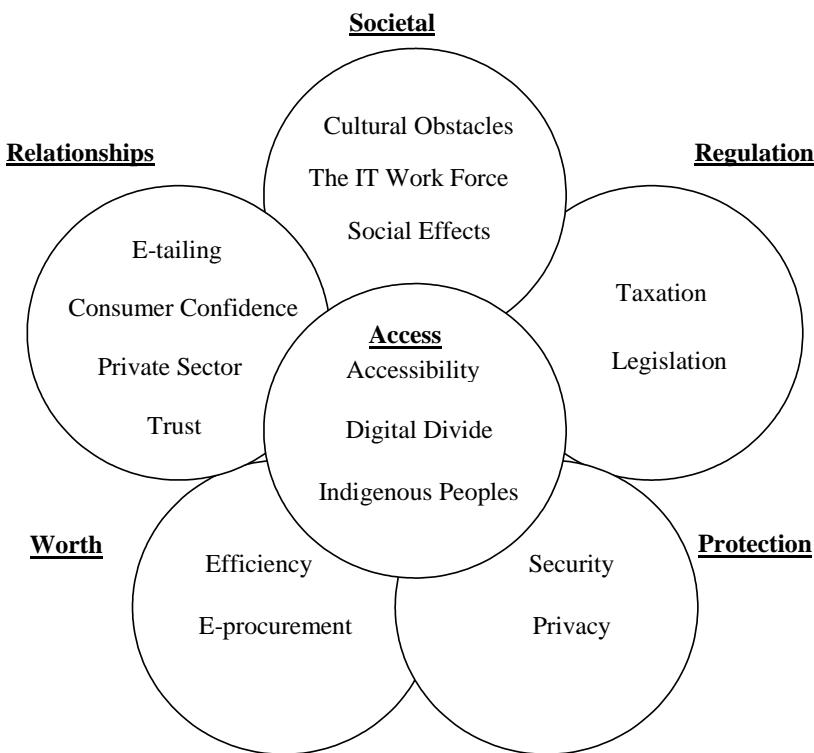
It is anticipated that the targets for e-government in the next few years will involve further delivery and transformation; for example, by the end of 2007 it is intended that networks and Internet technologies will be integral to the delivery of government information, service, and process (NZSSC, 2004). Many governmental services will be redesigned and developed and fully or partially delivered electronically in order to achieve customer satisfaction. For example, the Government Shared Network (GSN) is a new fiber-optic network that enables government agencies to securely share information at higher speeds and more cost effectively, improving the delivery of information and services to the New Zealand public and connecting government agencies anywhere in New Zealand on a secure voice and data capable network. Services delivered include: internet access, IP telephony, secure remote

access and offsite data storage. Traditional service channels will continue to be available; however, the use of technology will be enhanced. Online participation has also been targeted and it is intended that more people will take advantage of Internet technology that enables them to contribute to discussions on local matters and discuss political issues or policy developments.

By 2010 it is anticipated that New Zealand government will have been transformed through its use of the Internet (NZSSC, 2007); services will become more proactive and agencies will ‘push’ services out to citizens. Cross-agency service integration will be a main feature by 2010; people will receive information and services at a single portal without any duplication and complication. Flexibility, convenience, efficiency, satisfaction and ‘customerization’ will be the focus.

### **2.3 Identification of critical E-government issues**

In early-2000 the authors developed a tentative framework describing the key issues for successful e-government in the USA (Figure 1 and Table 1). This list of items was based on an extensive review of government website features, the government’s e-commerce and e-government policies, and commonly recurring themes identified in the literature concerning proposed development of electronic government in the USA (Deakins et al., 2001). While acknowledging that other countries also had a large quantity of e-government assets in place, the USA was chosen because of the advanced nature of e-government in that country and its dominance of the e-government literature. At the time, e-government in the USA was highly fragmented across some 20,000 Federal, State and Local government websites and web portals, -although a ‘firstgov.gov’ website initiative was predicted to become the ‘monumental breakthrough’ in one stop shopping for government services. The tentative issues framework was used to underpin the first e-government survey instrument in 2000 and the authors subsequently found a good level of policymaker support for the same 16 key issues within the New Zealand e-local government environment (Deakins & Dillon, 2002; Dillon et al., 2006).



**Figure 1 : Creating successful e-government (Deakins et al., 2001)**

**Table 1 : Sixteen Critical E-government Issues**

**Accessibility:** Being able to access convenient online government services

**Taxation:** Online collection of taxes, rates, and other levies

**Security:** Measures taken as a precaution against online theft, espionage, sabotage, etc.

**Efficiency:** The extent to which the organization's functions are performed with minimum consumption of resources (money, time, people...)

**E-tailing:** The conduct of financial transactions by electronic means (electronic retailing)

**Cultural Obstacles:** An activity or a view that clashes with some aspect of an organization's long-accepted norms

**Digital Divide:** Differences based on economic status, gender, race, physical abilities, and

geographic location between those who have or do not have. Examples include: access and skills to use information, the Internet, and other information technology

**Privacy:** Citizens' expectation that their personal details will be kept concealed from others

**Legislation:** A law enacted by a legislative body and the act of legislating e-business/e-government

**Consumer Confidence:** Consumer confidence in performing online transactions

**The IT workforce:** Technical IT graduates and people with management, leadership, and entrepreneurial e-commerce skills; employed in-house

**Private Sector:** That part of a nation's economy not controlled by the government

**Trust:** The trait of citizens believing in the honesty and reliability of local government employees and their practices

**Social Effects:** Producing or bringing about a result that relates to human society and its members; not always beneficial

**E-procurement:** Use of the Internet to streamline the purchase and supply of goods and services from suppliers and contractors; seeks to replace traditional paper-laden process

**Indigenous Peoples:** Have a historical continuity with pre-invasion, or pre-colonial, societies that developed on their territories; consider themselves distinct from other sectors of society

### 3. Methodology and Research Design

E-government is a broad field of research and the focus of the present study was on comparing local e-government services in Taiwan and New Zealand. At one level the survey was designed to reveal the level of sophistication of local authority websites (in terms of the features they contain); at another level it sought to understand the rationale behind the websites in terms of the formal and informal policies guiding their creation and ongoing maintenance. In addition to being of interest to other e-government researchers, it was anticipated that the findings would be of value to policy makers in both countries, perhaps providing an opportunity to improve local e-government performance.

To enable international comparison an existing questionnaire was used to collect data from local government agencies in Taiwan and New Zealand (Deakins & Dillon, 2002). The key issue ‘Indigenous Peoples’ was judged to be irrelevant for the Taiwan situation and was left out of that survey. Due to national language differences, and to reduce the possibility of misunderstanding, two different language versions of the questionnaire were used; English for New Zealand and Mandarin for Taiwan.

Pilot versions were revised in light of feedback prior to being sent, with a cover letter, to each targeted Chief Executive or General Manager of every regional and local authority in Taiwan and New Zealand, -together with a prepaid envelope for returning the completed questionnaire. The purpose of the study was outlined to the recipients, who were asked to forward the survey to “the person in charge of website policy and design”. To help encourage a high response rate the recipients were guaranteed anonymity and a deadline was set for the survey completion/return of no more than four weeks from when first received; reminders were sent after three weeks where necessary.

Of the 25 local authorities in Taiwan, 13 usable responses were received, representing a response rate of 52 percent. This compares with 85 New Zealand local authority organizations, from which 51 usable responses were received, representing a slightly improved response rate of 60 percent. While it is impossible to judge whether the respondents were, in fact, the final arbiters of e-government strategy for their organization; nevertheless, their titles (IT Director, Strategic Information Manager, Head of Public Relations...) predominantly indicated close involvement with setting the local e-government strategy agenda.

## 4. Discussion of Findings

### 4.1 Key Demographics

Table 2 provides a demographic comparison of the survey respondents.

**Table 2 : Key Demographic Information**

	Taiwan (%)	NZ (%)
<b>No. of employees</b>		
0-100	0	49
>100	100	51
<b>Population base</b>		
0-100,000	8.5	78
100,001-200,000	16.5	12
>200,000	68	16
<b>Website expenditure (NZ\$)</b>		
<5,000	8	12
5,000-9,999	8	17

10,000-50,000	42	48
>50,000	17	23
>100,000	25	0

## 4.2 Website development philosophy

Table 3 compares the (average) value of significance that e-government policymaker's attached to particular characteristics during the development of their present website. It can be seen that, while the respective ranking of the significance of website characteristics is very similar (Spearman's rank correlation rho = 0.755; p = 0.007), there are some interesting exceptions. The general form of statements was "Please indicate, by circling one number for each statement, the extent that you considered each of the following during the development of your website". Statements were arranged on a six-point Likert scale, where 0= Do not know, 1= Not at all, 3= Somewhat, and 5= To a large extent.

**Table 3 : Website Philosophy Comparison**

Characteristic	Taiwan Average (Ranking)	NZ Average (Ranking)	$\Delta$
A website to push information	4.74 (5)	3.21 (5)	0
Accessibility for ALL citizens	4.87 (2)	4.40 (1)	1
A website to provide information in response	4.92 (1)	3.68 (3)	2
A website to provide links to info & services	4.80 (4)	4.00 (2)	2
A website as just an extra channel	4.85 (3)	3.54 (4)	1
A website to foster collaboration with suppliers	2.88 (9)	2.83 (8)	1
Recognizes importance of a physical presence	4.72 (6)	2.81 (9)	3
Dedicated to a concept of e-democracy	3.22 (8)	2.30 (11)	3
Intention to reduce physical sites	4.28 (7)	2.88 (7)	0
Resisting the e-government trend	2.25 (10)	2.50 (10)	0
Focus on revitalizing existing physical operations	2.12 (11)	2.91 (6)	5
Spearman's rank correlation rho = 0.755; p = 0.007			

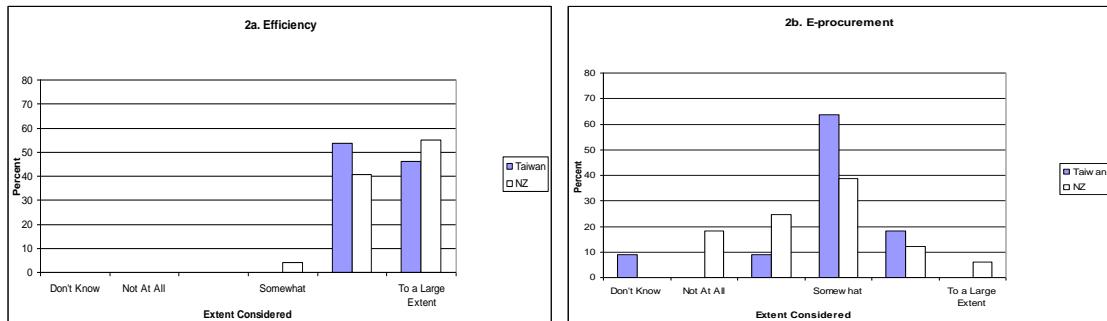
It is evident that both countries have focused on providing a wide range of public-organization information to as many citizens as possible, increasingly in the form of downloadable documents and forms (rather than static information), plus links to other useful information services. While recognizing the reduced importance of having a physical presence for its citizens, nevertheless the website is perceived to be just an extra channel and (in New Zealand especially) effort has also been invested into revitalizing and reducing existing paper-based processes. Less significance was attached to features having the potential to enable collaborative relationships with contractors and suppliers, or tighter integration of processes. It also appears that, while local government organizations are not resisting the e-government trends, those in New Zealand in particular are not enthusiastically embracing the concept of e-democracy.

### 4.3 Website Issues

This section compares 15 key e-government issues from the Taiwan and New Zealand policymakers' perspectives, in line with earlier work by the authors (Deakins et al., 2001; Deakins & Dillon, 2002). The general form of statements was "Please indicate, by circling one number for each statement, the extent to which you would consider each of the following when developing or maintaining your website". Statements were arranged on a six-point Likert scale, where 0= Do not know, 1= Not at all, 3= Somewhat, and 5= To a large extent. Respondents were provided with definitions of a number of e-government related terms, such as *Digital Divide*, *E-procurement*, and *E-tailing*.

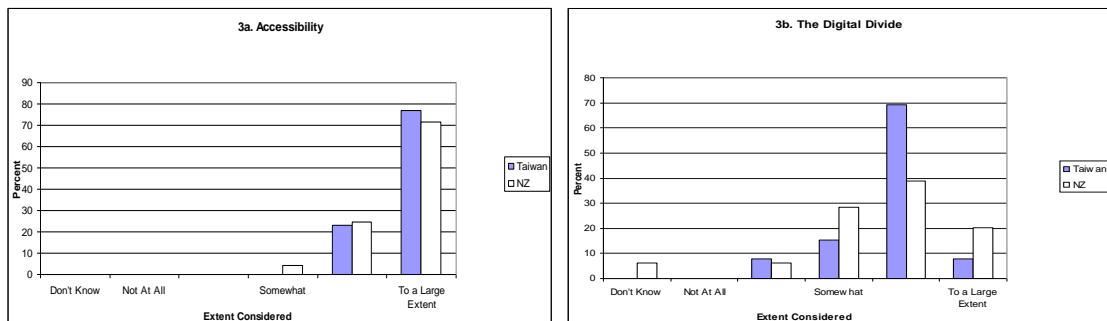
### 4.4 Issues of Worth

Building a digital government has the potential to create *Efficiency* by providing citizens with relatively inexpensive real-time access to consistent, up to date information and transaction facilities. Similarly, developing an e-government presence can save time and money through the adoption of *E-procurement*, which creates the potential for savings on transaction cost and product prices. Policymakers in both countries exhibited a high-level of understanding of the *Efficiency* issue, Figure 2a, and clearly indicated the need to strive for efficiencies when developing or maintaining a website (Taiwanese results are the shaded bars). In contrast, Figure 2b indicates some uncertainty (Taiwan) regarding the meaning of e-procurement, and that a sizeable proportion of policymakers in both countries do not value its potential, -to reduce transaction costs for example.

**Figure 2 : Issues of Worth**

#### 4.5 Issues of Access

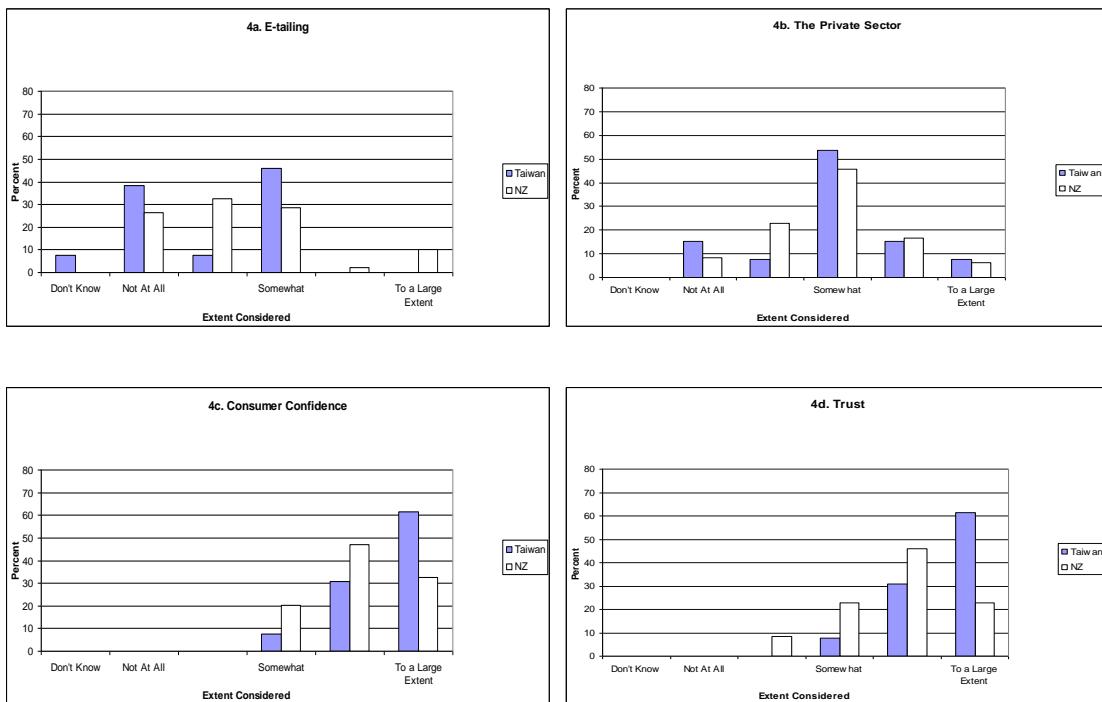
E-government only will be successful when access to the Internet is available to everyone, a fact that is well-recognized by policymakers in Taiwan and New Zealand (see Figure 3a). In contrast, there was a wider range of opinion on the subject of the *Digital Divide*, an issue relating to the fact that not everyone has the same ability to access to the internet even when the infrastructure is available (see Figure 3b). Taiwanese respondents appear overall to be more aware of the need to address this important issue.

**Figure 3 : Issues of Access**

#### 4.6 Issues of Relationships

Figure 4a indicates that the many Taiwanese and New Zealander respondents would not consider *E-tailing* a high priority when developing and maintaining their websites, -possibly as a result of not perceiving the value of setting up good relationships between other organizations in the private and public sectors? While a lack of available infrastructure could be a reason, a small proportion of Taiwanese respondents indicated they did not know the meaning of the *E-tailing* term. While local government organizations can benefit from the support provided by businesses in the private sector, Figure 4b shows that in both Taiwan and New Zealand there is a lack of willingness to cooperate with the *Private Sector* by the majority of respondents. In contrast, *Consumer Confidence* and *Trust* (with online transactions) received

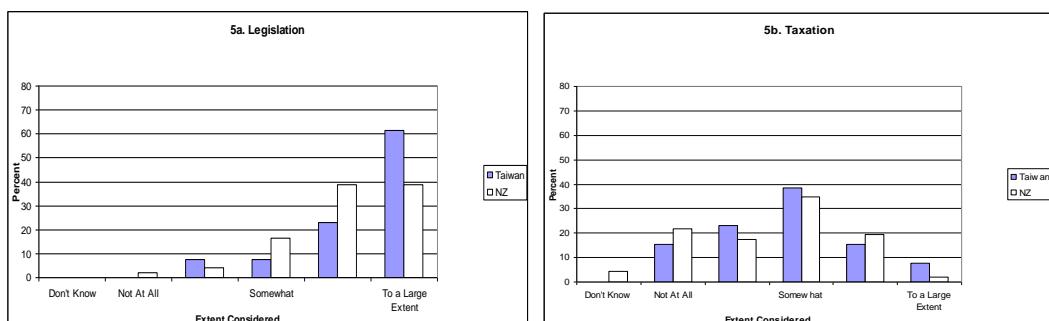
ratings of significant (or better) by policymakers in both countries, indicating good recognition of the importance of citizen acceptance to the success of e-government (see Figures 4c and 4d).



**Figure 4 : Issues of Relationships**

#### 4.7 Issues of Regulation

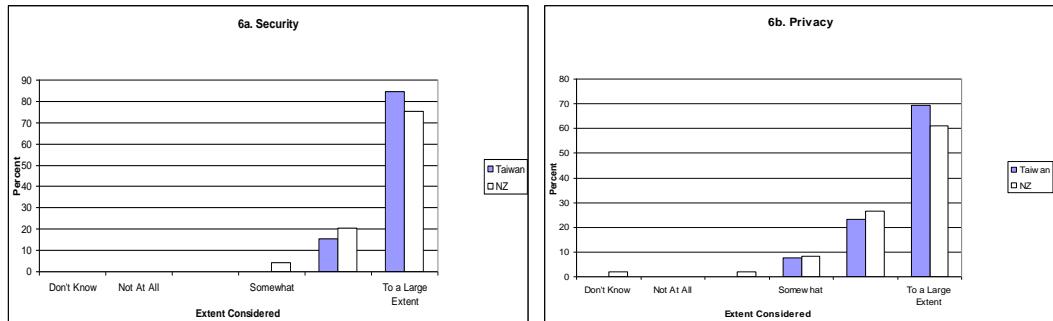
Figure 5a indicates that policymakers in Taiwan and New Zealand believe *Legislation* is a significant issue when implementing e-government. This may be a reflection of the environment in which local government staff operates. There was a similar, though more mixed, basis for support for the issue of *Taxation*, Figure 5b.



**Figure 5 : Issues of Regulation**

## 4.8 Issues of Protection

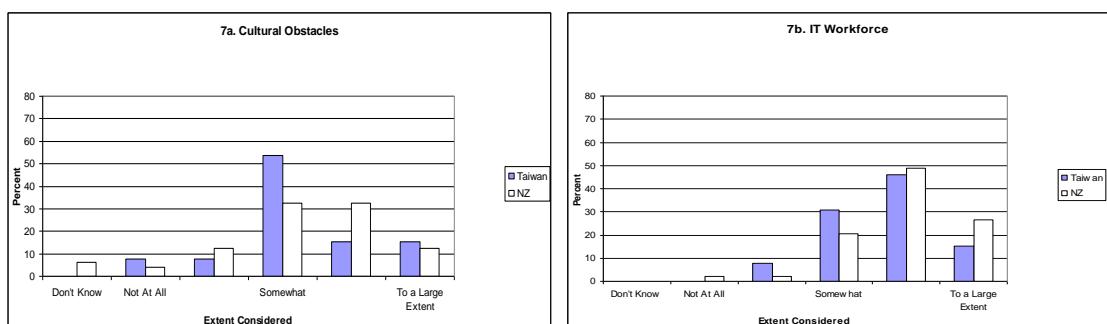
Figures 6a and 6b indicate that public organizations in Taiwan and New Zealand are well aware of the importance of *Security* and *Privacy* issues related to citizens' adoption and use of governmental Internet services.

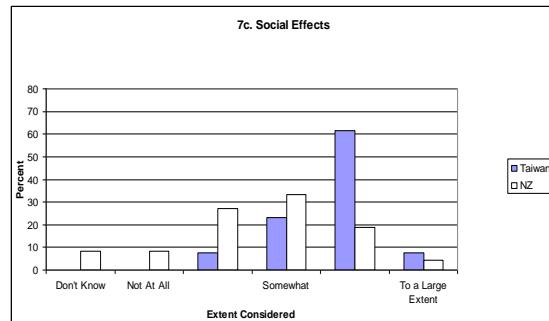


**Figure 6 : Issues of Protection**

## 4.9 Societal Issues

In both countries internal organization culture, and the possibility of *Cultural Obstacles* arising from redefinition of the workplace, attracted a wide range of opinion (Figure 7a), -possibly reflecting individual workplace circumstances. In contrast, there was good agreement by the respondents of the significance they attached to the shortage of specialists in the *IT Workforce*, and particularly in New Zealand where a skills shortage is acknowledged, Figure 7b. A wide range of opinion is indicated in Figure 7c, on the subject of (intended and unintended) *Social Effects*. Taiwanese respondents indicate a greater awareness of the *Social Effects* of their e-government initiatives, whereas a proportion of New Zealand respondents indicated they did not know the meaning of the term.





**Figure 7 : Societal Issues**

Table 4 summarizes the opinions of the Taiwanese and New Zealander respondents concerning 15 key e-government issues, which the authors argue are critical to the success of any e-government initiative. The center columns show the percentage of respondents in each country reporting that they would consider the named Key Issue to a ‘Somewhat’ (or higher) extent when they implement e-government policy, and also the proportion of respondents reporting that they would consider the named Key Issue ‘To a large extent’ when they implement e-government policy. From this information an overall assessment of the significance of each Key Issue is derived in the two right-hand columns, as follows: For those cases when at least 50 percent of respondents reported that they would consider the Key Issue to a ‘Somewhat’ (or higher) extent, the value of ‘Significance of Key Issue’ was deemed to be ‘Medium’; similarly, when at least 50 percent of respondents reported that they would consider the Key Issue ‘To a large extent’, the value of ‘Significance of Key Issue’ was deemed to be ‘High’. In all other cases the value was deemed to be ‘Low’. A tentative assessment is indicated when a wide range of opinion is observed (this was deemed to occur when the standard deviation of any Key Issue frequency distribution <20%).

**Table 4 : Comparison of Taiwan and New Zealand Results**

<b>Key Issue</b>	<b>Percentage of respondents reporting they would consider the named Key Issue to the extent:-</b>					
	'Somewhat' (or higher)		'To a large extent'		<b>Significance of 'Key Issue'</b>	
	Taiwan	NZ	Taiwan	NZ	Taiwan	NZ
Efficiency	100	100	46.2	55.1	Medium	High
E-procurement	81.8	57.1	0.0	6.1	Medium	Medium (W)
Accessibility	100	100	76.9	71.4	High	High
Digital Divide	92.3	87.8	7.7	20.4	Medium	Medium (W)
E-tailing	46.2	40.8	0.0	10.2	Low	Low (W)
Private Sector	76.9	68.8	7.7	6.3	Medium (W)	Medium (W)
Consumer Confidence	100	100	61.5	32.7	High	Medium
Trust†	100	91.7	61.5	22.9	High	Medium (W)
Legislation	92.3	93.9	61.5	38.8	High	Medium (W)
Taxation	61.5	56.5	7.7	2.2	Medium (W)	Medium (W)
Security	100	100	84.6	75.5	High	High
Privacy	100	95.9	69.2	61.2	High	High
Cultural Obstacles†	84.6	77.6	15.4	13.1	Medium (W)	Medium (W)
IT Workforce	92.3	95.9	15.4	26.5	Medium (W)	Medium (W)
Social Effects†	92.5	56.3	7.7	4.2	Medium (W)	Medium (W)

(W) Tentative assessment due to a wide range of expressed opinion (SD&lt;20%)

Regarding the significance of these results, the Shapiro-Wilk test (SPSS<sup>TM</sup>) confirmed that only the Taiwan issue datasets: *Taxation*, *Cultural Obstacles*, *IT Workforce*, and *Private Sector* were normally distributed, and that none of the New Zealand issue datasets was normally distributed; hence, a Mann-Whitney test was used to determine whether differences between the location (mean, median...) of the underlying dataset distributions were truly significant,-or whether they could have occurred by chance.

Statistically significant differences were detected in Table 5 between the Taiwan and New Zealand datasets: *Trust* and *Social Effects* (at the alpha equals .01 level). Even though large proportions were used to define the final values of 'Significance of Key Issue' in Table 4, the cross-country differences in the significance of the issues: *Efficiency*, *Consumer Confidence*, and *Legislation* can only be weakly stated at this time; particularly as the very unequal sample sizes may have biased the Mann-Whitney analysis.

**Table 5 : Issues: Descriptive Statistics**

		<b>Taiwan</b>	<b>New Zealand</b>	
Accessibility	Mean (SD)	4.769 (.438)	4.680 (.5511)	Mann-Whitney
	Skewness (ses)	-1.451 (.616)	-1.534 (.337)	exact sig. (2-tailed)
	Kurtosis (sek)	.095 (1.191)	1.529 (.662)	p= .769
Taxation	Mean (SD)	2.769 (1.166)	2.532 (1.231)	Mann-Whitney
	Skewness (ses)	.152 (.616)	-.259 (.347)	p=.656
	Kurtosis (sek)	-.193 (1.191)	-.809 (.681)	
Security	Mean (SD)	4.846 (.376)	4.72 (.536)	Mann-Whitney
	Skewness (ses)	-2.179 (.616)	-1.805 (.337)	p=.645
	Kurtosis (sek)	3.223 (1.191)	2.514 (.662)	
Efficiency	Mean (SD)	4.462 (.519)	4.520 (.580)	Mann-Whitney
	Skewness (ses)	.175 (.616)	-.735 (.337)	p=.690
	Kurtosis (sek)	-2.364 (1.191)	-.414 (.662)	
E-tailing	Mean (SD)	1.923 (1.115)	2.400 (1.212)	Mann-Whitney

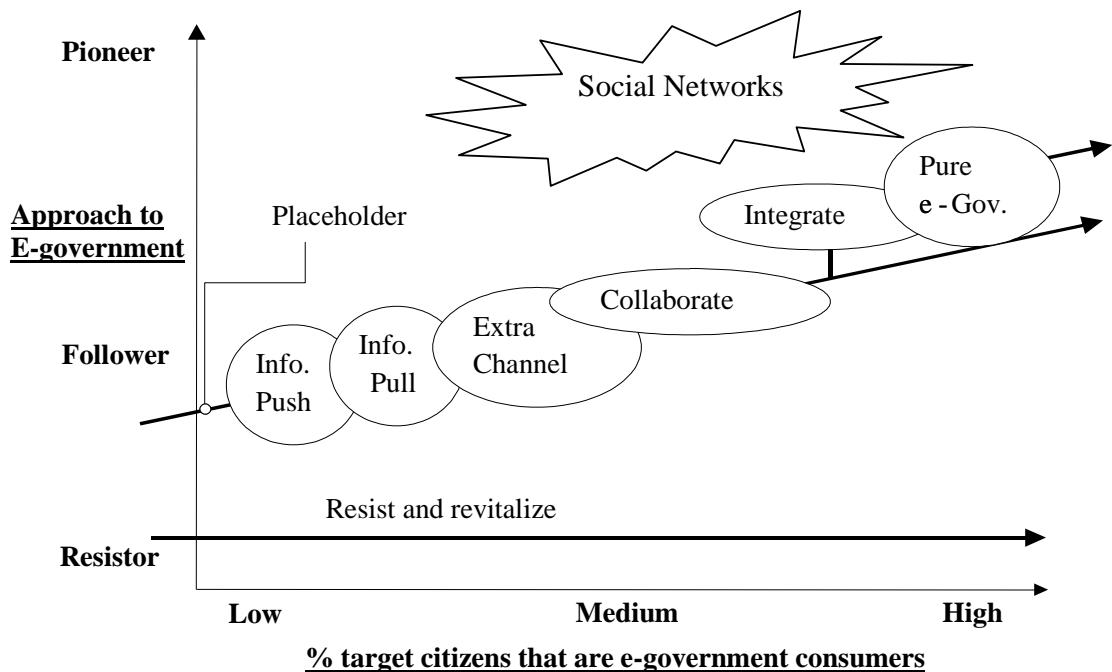
	Skewness (ses)	-.252 (.616)	.745 (.337)	p=.324
	Kurtosis (sek)	-1.665 (1.191)	-.054 (.662)	
Cultural Obstacles	Mean (SD)	3.231 (1.092)	3.120 (1.350)	Mann-Whitney
	Skewness (ses)	-.081 (.616)	-.849 (.337)	p=.933
	Kurtosis (sek)	.668 (1.191)	.375 (.662)	
Digital Divide	Mean (SD)	3.769 (.725)	3.560 (1.232)	Mann-Whitney
	Skewness (ses)	-1.156 (.616)	-1.339 (.337)	p=.716
	Kurtosis (sek)	2.469 (1.191)	2.27 (.662)	
Privacy	Mean (SD)	4.615 (.650)	4.420 (.971)	Mann-Whitney
	Skewness (ses)	-1.576 (.616)	-2.484 (.337)	p=.637
	Kurtosis (sek)	1.801 (1.191)	8.134 (.662)	
Legislation	Mean (SD)	4.385 (.961)	4.100 (.953)	Mann-Whitney
	Skewness (ses)	-1.613 (.616)	-1.091 (.337)	p=.243
	Kurtosis (sek)	2.096 (1.191)	1.173 (.662)	
Citizen Confidence	Mean (SD)	4.539 (.660)	4.140 (.729)	Mann-Whitney
	Skewness (ses)	-1.191 (.616)	-.223 (.337)	p=.077
	Kurtosis (sek)	-.645 (1.191)	-1.050 (.662)	
IT Workforce	Mean (SD)	3.692 (.859)	3.980 (.869)	Mann-Whitney
	Skewness (ses)	-.241 (.616)	-.933 (.337)	p=.251
	Kurtosis (sek)	-.048 (1.191)	1.611 (.662)	
Private Sector	Mean (SD)	2.923 (1.115)	2.918 (.997)	Mann-Whitney
	Skewness (ses)	-.252 (.616)	.037 (.340)	p=.894
	Kurtosis (sek)	.475 (1.191)	-.070 (.668)	
Trust†	Mean (SD)	4.539 (.660)	3.857 (.900)	Mann-Whitney
	Skewness (ses)	-1.191 (.616)	-.449 (.340)	p=.010
	Kurtosis (sek)	.645 (1.191)	-.410 (.668)	
Social	Mean (SD)	3.692 (.752)	2.633 (1.286)	Mann-Whitney

Effects†	Skewness (ses)	-.784 (.616)	-.307 (.340)	p=.003
	Kurtosis (sek)	1.223 (1.191)	-.188 (.668)	
E-procurement	Mean (SD)	2.818 (1.079)	2.660 (1.118)	Mann-Whitney
	Skewness (ses)	-1.907 (.661)	.174 (.337)	p=.436
	Kurtosis (sek)	4.964 (1.279)	-.483 (.662)	
† Difference in the samples is significant at the level indicated (Mann-Whitney U)				

## 5. Conclusions

It is evident that good agreement exists between the Taiwanese and New Zealander policymakers that three key issues are highly significant to them when they implement e-government policy: *Accessibility*, *Security* and *Privacy*. Interestingly, *Efficiency* is considered highly significant by New Zealander policymakers although less so by their Taiwanese counterparts. Similarly, the policymakers agree on a medium level of significance for the four key issues: *E-procurement*, *Digital Divide*, *Private Sector*, *Taxation*, *Cultural Obstacles*, *IT Workforce*, and *Social Effects*; they also agree on a lower level of significance for *E-tailing*. It is interesting that Taiwanese respondents rated more significant than their New Zealand counterparts the issues: *Consumer Confidence*, *Trust*, and *Legislation*. It is also noteworthy that those in charge of driving e-government website development did not mention enhanced (e-) democracy as being a highly significant factor, particularly in New Zealand.

E-government policymakers in Taiwan and New Zealand tend to favor providing useful information rather than collaborative service channels with contractors and suppliers, or integration of processes to satisfy citizens. By way of contrast, De Kares-Silver's (1998) e-commerce model is presented in Figure 8 against the backdrop of contemporary (commercial) online social networks, in which a trend is currently emerging of users no longer accepting that they will merely soak in whatever information is put in front of them, but expecting that they will contribute and shape content themselves.



**Figure 8 : Evolution of E-Government Websites (modified from De Kare-Silver, 1998)**

This model indicates three possible migration paths (*Resistor*, *Follower*, or *Pioneer*) for a public sector organization to pursue when evolving its e-government website to better serve the needs of the community; dependant upon the size of the target audience and the attitude taken to e-government by policymakers. Both Taiwan and New Zealand are recognized to possess well-developed e-government, yet e-(local) government policymakers continue to favor providing useful information, and links to useful information, rather than collaborative service channels with contractors and suppliers, or integration of processes that would satisfy citizens on all fronts. It will be interesting to see which future path(s) Taiwan and New Zealand will choose to take.

A study of this scope inevitably suffers from inadequacies. A chief limitation is that a 100 percent response rate from policymakers was not achieved, resulting in an incomplete snapshot of the e-government scene; the small number of Taiwan organizations has been highlighted. The occasional lack of understanding of some of the key e-government issues, in spite of strong central government promotion, may have led to erroneous returns; future research will need to more carefully define the issues for respondents.

Interesting aspects for further investigation include reasons for the wide range of responses to some of the key e-government issues as noted above; the effects of e-government on the organization, citizen and employees; and consideration of new

forms of e-government in response to the recent emergence of online social networks and lobby groups.

## REFERENCES

1. Basu, S. (2004). E-government and Developing Countries: An Overview. *International Review of Law Computers*, 18(1).
2. Boyle B. (2000). E-government: E-Government Unit. *Proceedings of the GOVT.NZ Conference 2000*.
3. Choudrie, J. & Lee, H. (2004). Broadband Development in South Korea: Institutional and Cultural Factors. *European Journal of Information Systems*, 13.
4. Corbett, C. (2004). The Future of Digital Government. In A. Pavliche & G. D. Garson (Eds.), *Digital Government: Principles and Best Practices* (pp. 344-67), Idea Group Publishing, USA.
5. De Kare-Silver, M. (1998). E-Shock: The Electronic Shopping Revolution: Strategies for Retailers and Manufacturers. AMACOM, New York.
6. Deakins, E., Caves, A. & Dillon, S.M. (2001). *Issues of e-government in the United States*. University of Waikato Department of Management Systems Working Paper Series, No 2001-01.
7. Deakins, E. & Dillon, S.M.. (2002). E-government in New Zealand: The local authority perspective. *The International Journal of Public Sector Management*, 15(5).
8. Dillon, S.M., Deakins, E. & Chen, W. J. (2006). E-local government in New Zealand: the Shifting Policymaker View. *The Electronic Journal of e-Government*, 4(1), 4-18. Retrieved August 15, 2007 from the World Wide Web: [www.ejeg.com](http://www.ejeg.com)
9. G2TT. (2007). Government 2.0 think tank website. Retrieved May 10, 2007 from the World Wide Web: [www.gov20.info/node/21](http://www.gov20.info/node/21)
10. Gichoya, D. (2005). Factors Affecting the Successful Implementation of ICT Projects in Government. *The Electronic Journal of e-government*, 3(4).
11. Griffin, D., Foster, A. & Halpin, E. (2004). Joined-up E-government: An Exploratory Study of UK Local Government Progress. *Journal of Information Science and Technology*, 1(2), 57-83.
12. Heeks, R. (2006). Benchmarking eGovernment: Improving the National and International Measurement, Evaluation and Comparison of eGovernment. Retrieved May 10, 2007 from the World Wide Web: <http://www.sed.manchester.ac.uk/idpm/publications/wp/igov/index.htm>
13. Holmes, D. (2001). *E Gov: e-business strategies for government*. Nicholas Brealey Publishing, London.

14. ICA. (2004). International Council for Information Technology in Government Administration. *E-Government Development in Taiwan: Providing Innovative Public Services*. Surrey: Author.
15. Irani, Z., Love, P. E., Elliman, T., Jones, S. & Themistocleous, M. (2005). Evaluating E-Government: Learning from the Experience of Two UK Local Authorities. *Information Systems Journal*, 15.
16. Lee, M. (2003). Information Age Governing in Taiwan: Evaluate the Presence of Electronic Government in Taiwan. *Proceedings of the 53<sup>rd</sup> Annual Conference of the Political Studies*, University of Leicester, UK.
17. NZSSC. (2006). New Zealand State Services Commission, E-Government: A Vision for New Zealanders. Retrieved May 30, 2007 from the World Wide Web:
18. NZSSC. (2006). <http://www.e-government.govt.nz/programme/vision.asp>
19. NZSSC. (2003). New Zealand State Services Commission. *New Zealand E-government Strategy*. Wellington: Government Printing Office.
20. NZSSC. (2004). New Zealand State Services Commission. *Achieving E-government 2004: A Report on Progress Towards the New Zealand E-government Strategy*. Wellington: Government Printing Office.
21. Pavliche, A. (2004). The E-Government Challenge for Public Administration Education. In A. Pavliche & G. D. Garson (Eds.), *Digital Government: Principles and Best Practices* (pp. 276-289), Idea Group Publishing, USA.
22. RDEC. (2002). Research, Development and Evaluation Commission Executive, Yuan Taiwan. *Building Effective E-Government in Taiwan: Providing Innovative Public Services*. Taipei: Government Printing Office.
23. RDEC. (2003). Research, Development and Evaluation Commission Executive, Yuan Taiwan. *E-Government Development in Taiwan*. Retrieved May 30, 2007 from the World Wide Web: <http://www.rdec.gov.tw/eng/>
24. Schelin, S. H. (2004). Training For Digital Government. In A. Pavliche & G. D. Garson (Eds.), *Digital Government: Principles and Best Practices* (pp. 263-275), Idea Group Publishing, USA.
25. Teicher, J., Hughes, O. & Dow, N. (2002). E-Government: A New Route to Public Sector Quality. *Managing Service Quality*, 12(6), 384 – 393.
26. Weerakkody, V. & Choudrie, J. 2005, Exploring E-Government in the UK: Challenges, Issues and Complexities. *Journal of Information Science and Technology*, 2(2).
27. West, D.M. (2006). *Gobal E-Government 2006*. Retrieved May 10, 2007 from the World Wide Web: <http://www.insidepolitics.org/egovt06int.pdf>

29. WMRC. (2001). Retrieved May 10, 2007 from the World Wide Web:  
[\(<http://www.find.org.tw/eng/news.asp?msgid=24&subjectid=2&pos=0>\)](http://www.find.org.tw/eng/news.asp?msgid=24&subjectid=2&pos=0)

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