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Victorian local government websites: tracking information provision and e-service maturity

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Abstract

Local and municipal governments worldwide are embracing and using the Internet to deliver services and therefore better value to their communities. Current research has identified the use made of the Internet by higher levels of government. There has been limited research, however, examining the lowest tier; local government's approach to Internet use. This paper presents the results of a content analysis undertaken on Victorian local government Websites over four years and describes the results of usability testing also conducted on local government sites. The results identify the changes in e-service delivery over that time and the usefulness of the information and e-services to local communities.

Keywords

Local government, Municipal Councils, e-Government, Internet, usability

INTRODUCTION

Despite comparatively lower levels of funding for e-government initiatives, internationally Australia is still a highly ranked for e-government development, second only to the United States (United Nations, 2003). At the local government level in Australia it is not surprising that e-government and e-service delivery have been hampered by the generally lower levels of funding. Despite this however, many local governments have made significant progress in the use of the Internet to deliver information and e-services.

The current literature suggests that the direction and implementation of e-Government strategies is influenced by the different types of relationships citizens have with the different levels of government (Deakins & Dillon, 2002; SOCITM & I&DeA, 2002). It also suggests that local government is extremely important in the delivery of services to communities (Shackleton, Fisher, & Dawson, 2005; SOCITM & I&DeA, 2002; Sprecher, 2000). It is therefore important that citizens are able to easily access, interact and use government services effectively. This paper presents research which examined the progress Victorian local governments have made using the Internet to deliver traditional services, improve governance and enhance community contact. The research presented is based on a content analysis and usability testing of local government Websites. Specifically the questions that the research reported in this paper sought to answer are:

- How have Victorian local government websites matured in terms of e-government and e-services delivery since 2000?
- How easy are local government websites to use so that services can be accessed and used by the communities they serve?

E-GOVERNMENT MATURITY

Many e-Government models describe maturity within state and national bureaucracies and emphasise service provision (United Nations, 2002). However, the move from a physical to an online delivery environment in the local government sector is more complex as it involves multiple types of service provision and high levels of community engagement. More recent research indicates different patterns of e-Maturity for local government (Shackleton et al., 2005). A key reason is that local governments concentrate on different areas of importance, particularly areas relating to their communities. Unlike many state and federal governments and their specific government agencies, local governments offer a large range of information and services to a readily defined and often small community. These communities have close ties with elected representatives. Councils are often poorly resourced necessitating decisions about providing one service versus another. Thus with respect to eGovernment, they have lagged behind higher levels of government and have often been forced to enter the realm of eGovernment ill prepared. Local governments operate differently from higher levels of government and the limited research on local e-government maturity indicates that the generic models of e-Government maturity are not applicable. It is becoming clear that local governments mature in different ways, following a non linear path (Musso, Weare, & Hale, 2000; Quirk, 2000; Shackleton et al., 2005; SOCITM & I&DeA, 2002).

Quirk (2000) offers a four stage descriptive e-government model with Information Giving at the lower end and Empowering Citizens as the final stage. However the model also outlines different spaces of e-Government for local authorities; "e-Service: Interface with customers, e-Commerce: Cash transactions, e-Democracy: Political dialogue citizen and community, e-Decision-making: Better informed public interest decisions, e-Management: Improved management of people" (Quirk, 2000).

VICTORIAN LOCAL GOVERNMENT AND INTERNET USE

Australian local government or municipal councils have no constitutional legitimacy, are led by a mayor and elected by the residents who pay rates for services. This results in a sector with very limited funding. The Australian Federal Government has endeavoured to benchmark local government practices and now expects them to implement reforms to achieve higher levels of efficiency, effectiveness and accountability (Department of Transport and Regional Services, 1999). To reduce costs councils have been forced to exploit the Internet to deliver information and some services. Some financial assistance was provided to local governments in the mid 1990s although the maximum a council could receive was $20,000 (Multimedia Victoria, 1997). However, because of the disparate nature of the local government sector and the relatively low level of support and funding the progress Victorian councils have made towards e-Government is well behind that of state and commonwealth governments (Multimedia Victoria, 2002; NOIE, 2003; Shackleton et al., 2005). The source of funding for local eGovernment initiatives is still from councils funds or one-off government funding projects (NOIE, 2004).

Yet in this environment more citizens are accessing government services over the Internet particularly at the local government level. In one Victorian outer suburb council of Melbourne, approximately 14% of citizens visited the council web site on at least one occasion during the year. Moreover, 31% of these were outside of council office hours and visitors to the site were seeking range of basic and relatively sophisticated information and services (Shackleton, 2006).

The purpose of this research was to better understand the different approaches and priorities local governments have towards e-service delivery and to assess the effectiveness of those Web-based initiatives.

RESEARCH METHODOLOGY

This research was undertaken in two stages, the first stage was a content analysis of local government Websites between 2001 to 2004. The second stage involved a usability evaluation of local government Websites that was undertaken in 2005.

Content analysis of Council websites

The first stage of the research sought to identify content, investigate changes to content and level of maturity of different aspects of Victorian council Websites over the period 2001 - 2004. The purpose was to understand the impact the Internet has had on how local governments deliver services to their communities. The model described by Quirk (2000) was selected as a basis for the evaluation of local government websites as it suggests that local e-Government maturity may not follow a linear path and it emphasizes the disparate range of functions and services provided by governments at the local level.

A context matrix was developed and used to examine the presence of information and services and to assess the changes in the sophistication of service delivery over time. Twenty of seventy nine Victorian council Websites (25%) were selected to be examined. It should be noted that at the time the first content analysis was conducted some Councils did not have any web presence at all. The representative sample was chosen to reflect the

breakdown between metropolitan, rural and outer suburban councils known as 'interface' councils as well as budgetary size and population size.

The content matrix was used to examine the presence of a number of features such as basic information, email facilities and the ability to make a payment. These features were grouped under three of the four categories as outlined by Quirk (2000), e-service, e-commerce and e-governance (a combination of e e-decision-making and e-democracy. E-management relates to internal council operations generally delivered through an intranet and so not included in this research.

As an example, under Basic Information the researchers looked for the presence or lack of presence of features such as, information about the council, a location map, and information on the mayor or staff.

Usability testing of Council websites

A usability evaluation was undertaken of twenty of the seventy-nine Victorian council websites (25%). Some of the websites were part of the earlier content analysis, others were not. The sites were selected using the same criteria as for the content analysis, that is that they covered metropolitan, rural and regional councils, large and small populations and different income levels. The usability evaluation was designed to help understand how effective council websites are from the perspective of the users and to compare this data with the data from the content analysis. The usability instrument was adapted from an instrument designed by the researchers to evaluate small-business websites and has been tested and shown to accurately measure those items the instrument is designed to measure (Fisher et al. 2004).

The instrument uses a combination of question types allowing data to be collected that is both quantitative and qualitative however only quantitative data is report in this paper. Users were asked to respond to 14 Likert scale statements and ten questions requiring a Yes/No response. Where questions and statements were presented requiring a response on a five-point scale, 1 was rated the lowest score and 5 the highest. The questions and statements were similar to other tests used by other researchers described in the literature for example Aladwani, (2002), Sutcliffe (2002), Zhang, Keeling, & Pavur, (2000).

A heuristic approach to the usability evaluation was taken. The technique accredited to Nielsen involves "experts, guided by a set of usability principles known as heuristics, evaluate whether user interface elements, such as dialog boxes, menus, navigation structure, online help, etc., conform to the principles." (Preece et al. 2002, 408). The usability test involved 49 students studying Human Computer Interaction where the curriculum included conducting usability testing. The questions users were asked guided their heuristic evaluation of the interface. This is consistent with the work of others for example Nielsen and Molich (1990). The use of students for usability evaluations is quite common, however needs to be carefully considered and realistic in terms of the websites evaluated and the tasks users complete. Sutcliffe (2002) for example used students to evaluate airline websites, Zhang et al. (2000) used students to evaluate web pages of Fortune 500 businesses. Nevertheless it is recognised that further research is needed on other community groups.

Each user was asked to evaluate three randomly assigned websites, this resulted in 140 completed evaluations. Users were asked to complete three tasks, these were designed to assess the three areas identified by Quirk (2000): locate a lost dog (e-service), find out how much it costs and how to pay dog registration (e-commerce), find the minutes of the last council meeting (e-decision-making/e-democracy). The tasks were designed to be tasks users of that particular age group (21-30 years) might be likely to perform on a local government website. Dumas and Redish (1994) are well known in the area of usability testing, they suggest that usability testing participants be given short scenarios, this was done. Students were told at the start of the exercise that they were to imagine that they had recently moved house to the council area of the web site they were evaluating. They were to imagine that type of information they might require from the council as a result of moving. They were also told that changes to parking arrangements in their area had been considered by the council at a recent meeting, hence the need to access the minutes of the last meeting. Users then completed a questionnaire exploring their experience and views of that site. Each website was explored by at least five users. A low number of evaluators is acceptable and is in line with usability testing where it is suggested that between five and eight users will generate useful results (Nielson and Mollich, 1990).

RESULTS

Content analysis

The researchers undertook a content analysis of 20 local council websites three times on the same websites. Although, information and services were grouped in key areas as identified by Quirk (2000), many local council services have multiple roles. For example, while community information informs residents of local activities, it also helps in community engagement with the council. This is particularly the case with e-Democracy and e-

Decision Making compared to e-Services which is easier to define and thus measure. Nevertheless, as the purpose of the context matrix was to show overall maturity in broad functional areas, individual services have been grouped under headings as outlined in Table 1. In this research, e-Decision Making and e-Democracy were grouped together as the information available on a council web page assists the user and both could be regarded as decision making relating to democratic processes.

Category & Feature	**Present (%)**		
	2001	2003	2004
eService			
Service details	90%	95%	100%
News and coming events	25%	100%	100%
FAQs	25%	25%	25%
Direct Email support	0%	5%	25%
Novel e-Services (interactive maps, lost dogs)	0%	20%	25%
Service Tracking	0%	55%	55%
eCommerce			
On-line payments (Rates)	23%	90%	95%
On-line payments (Other – pet registration, fines)	0%	5%	55%
Ordering facility (Downloadable Forms direct ordering, prepared forms)	5%	70%	100%
Email payment/ordering	5%	15%	20%
e-Decision Making/e-Democracy			
Council Information	95%	100%	100%
Community information	20%	100%	100%
Email address (for contact with the Council)	95%	100%	100%
Council decision making – minutes, strategic plans	20%	95%	100%
Links to other organizations/businesses			
Community Groups/Bulletin boards/Chat	65%	95%	95%
Room/Broadcasting	0%	5%	5%

Table 1: Summary of main characteristics by category in 2001 to 2004

The Internet enables local governments to keep communities better informed, build trust and strengthen the democratic process (OECD, 2001). Part of that process includes improving access and quality of information, seeking consultation and actively encouraging community participation. The quantity of governance-related information in the form of council details and information relating to council decision making provided via websites is increasing. Councils continued to improve in this area via the use of electronic feedback forms and opinion polls, and in one case video streaming of council meetings. Internet based service delivery grew rapidly in Victoria until 2003 with growth slowing since then. Most of the growth as indicated in Table 1, has been in providing email contact details, postings related to community information and providing details of available services.

The greatest growth over the last four years has been in the area of eCommerce involving monetary transactions, however there is significant variation between councils so the figures are deceptive. For example, all but one council provides an eCommerce facility for rate payments but there is great variation on what else can be paid online and how. A deeper analysis indicated that four councils have their own electronic payment systems while the rest use an external link to another provider. Three of these have provision for a number of accounts to be paid online, the fourth provides online payment only for rates and parking fines. The council with the most comprehensive payment options used an external electronic provider. Online payment options for the community of this local council included pet registrations, fines, child care costs, meals on wheels, other payments relating to aged care. Seven (35%) councils only had provision for the payment of rates and all were using an external provider for electronic payments. Six councils (30%) allowed two payments; online rates and usually animal registration.

The most variation, however, comes when we examine the e-Service category. This category included what could be regarded as the more creative uses of the technology for the delivery of services with some councils using the web to provide services such as tracking of building permits. Some examples of more novel users are: interactive maps which allow the user to drill down and find a specific street or building, pictures of dogs held at the pound searchable on breed. There was however no correlation between the level of e-Commerce activity and the provision of other electronic services. For example the council mentioned above which offers a very sophisticated map function and searchable photographs of lost dogs only offers online payment options for rates

and pet registration through a link to a third party payment provider. Another council with their own online payment system offers payment of a variety of accounts online but provides no other electronic services.

Prior to 2001, some councils had made significant progress while others were yet to establish a web presence. There were considerable differences within the sector with some councils offering an extensive range of services while the electronic services in other councils were almost non existent. In 2002, the entire Victorian local government was moving into electronic service delivery brought about by the Government funded Victorian Local Government Online Service Delivery (VLGOSD) Project.

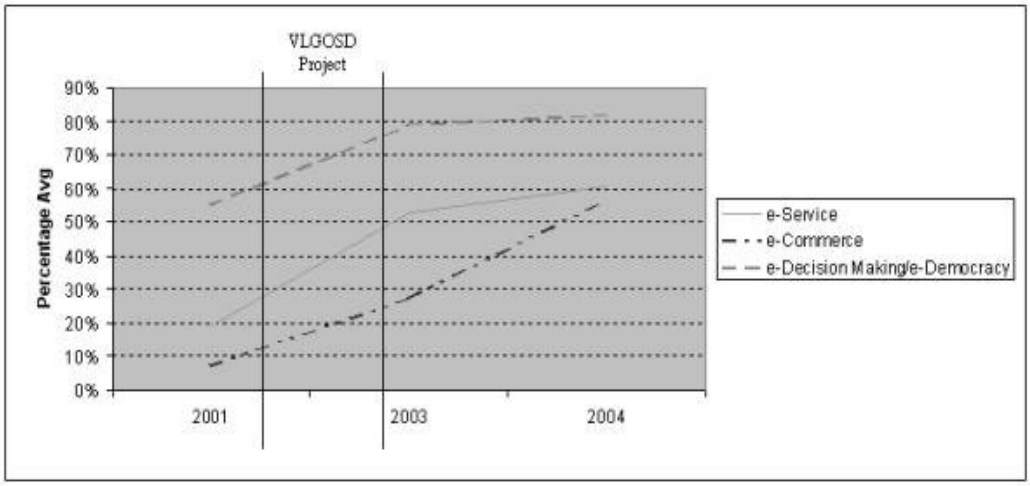

Figure 1 Summary of Councils' use of the Web

The vertical lines in Figure 2 indicate the years for which funding for electronic service delivery was available. Figure 2 illustrates that the more dramatic rise in the provision of e-services and information on council websites occurred after funding became available and tapered off once funding ceased.

Results - Council Website usefulness and effectiveness

The content analysis provided a picture of how local councils have matured in their approach to e-service delivery. However it is also important from a community perspective that the Council websites are of value and are effective. There is the expectation on the part of Councils that when information and services are provided through the Internet that their local community will use it. The Internet can reduce council costs but the cost savings will be negligible if the subsequent websites are not effective and the community continues to use over-the-counter services or the phone. The next phase of the research examined the extent to which information and services provided are being delivered effectively through the Internet.

The key website elements explored were: Visual design, the design of the text, how easy the site was to use and the quality and quantity of information provided. Table 2 provides the mean results for all Likert type scale statements (1 Strongly disagree to 5 Strongly Agree), and two of the questions put to users. The statements and questions are listed under the four key elements the usability test was designed to evaluate.

Statement/Questions	Mean
Visual design	
The design of the interface is appealing	3.62
Overall how would you describe your experience using this site? (1 Totally disengaged - 5 Very engaged)	3.08
The graphics on the site are appealing	3.45
Different parts of the interface such as the icons are consistent	3.78
Text design	
Generally the size of the text was easy to read	3.48
Generally the text was displayed in a way that was easy to read	3.60
Ease-of-use	
It was easy to navigate through the site	3.51
The site was easy to use	3.64

How easy was it to find the information you required to complete the tasks? (1 Very difficult – 5 Very easy)	3.68
Quality/quantity of information	
All the information required was on the Website	3.49
The language used was easy to understand	3.90
How much of the information on the site did you actually read? (1 Very little – 5 All)	2.44

Table 2 Results of website evaluations

As suggested in Table 2, many aspects of Council websites are of average to poor quality, average quality is deemed to be a result 3.5 to 4. The presentation of the Websites, particularly the graphics were not rated highly by the users. The real test of effectiveness however, is how well the users were able to complete the set tasks. Finding a lost dog was successfully completed by 72% of the users, 81% of users could find the most recent of council meeting minutes but only 46% were able to find information on how to register a dog and the cost. Many of the users anecdotally mentioned how poor the search engines on the websites were, clearly hindering their ability to complete the tasks successfully.

Table 3 presents a summary of results of all the council websites evaluated. The four key usability elements identified and the questions and statements from Table 2 were combined and an average calculated. The number of users who explored each site is also provided in brackets and the type of council geographically. The websites are ordered according to the overall score of the website with the council with the highest overall score listed first. The maximum score possible was 20.

Site	Visual design	Text design	Ease-of-use	Info. provision	Avg
Above average					
Whitehorse City - Metropolitan (5)	4.5	3.7	4.2	3.7	16.2
Whittlesea City- Metropolitan outer (5)	3.9	4.1	4.2	3.5	15.7
Alpine Shire - Rural (6)	3.9	3.7	4.0	3.7	15.3
Benalla Rural City - Rural (8)	3.7	3.9	3.8	3.5	15.1
Port Phillip City - Metropolitan (14)	3.8	3.3	4.2	3.6	14.9
Melton Shire - Metropolitan outer (8)	3.6	3.7	3.9	3.3	14.6
Colac Otway Shire - Rural (8)	3.6	3.4	3.8	3.7	14.5
Yarra City -Metropolitan inner (7)	3.3	4.2	3.8	3.1	14.4
Nillumbik Shire - Metropolitan interface (9)	3.5	3.5	3.8	3.3	14.3
Glen Eira City - Metropolitan (6)	4.1	3.5	3.5	3.0	14.1
Below Average					
Wodonga City - Regional (5)	3.7	3.7	4.1	2.4	14.0
Bendigo City - Regional (5)	3.6	3.5	3.7	3.0	13.8
Knox City - Metropolitan (8)	3.0	3.9	3.5	3.2	13.6
Ballarat City - Regional (7)	3.0	3.2	3.6	3.1	13.0
Well Below Average					
Hobsons Bay City - Metropolitan (6)	3.0	3.7	3.0	3.2	12.9
Darebin City -Metropolitan (6)	3.4	3.6	2.9	2.8	12.8
Bayside City - Metropolitan (5)	3.1	3.4	3.1	3.0	12.7
Moonee Valley City - Metropolitan inner (8)	3.1	3.6	2.7	3.0	12.5
Shepparton City - Regional (9)	3.0	3.0	3.0	3.0	12.0
Mildura Rural City - Rural (5)	3.1	1.8	2.8	3.4	11.1
Average all sites	**3.6**	**3.6**	**3.6**	**3.3**	**14.1**

Table 3 Summary of usability evaluations of council websites

There was a significant difference in the scores across the websites with Whitehorse City Council scoring 16.2 and Mildura Council the lowest rated website with a score of 11.1. Fifty percent of the council websites were below average in quality. Ease of use and the quality of the information provided were the two factors rated most poorly for the six Council's whose websites were ranked below average.

The quality of a website was not determined however by the location of the council. The third and fourth ranked websites belong to councils in rural Victoria and two of the worst were metropolitan councils. The third worst site is in the top 10% in budget size in Victoria and has a comparatively high IT budget.

The researchers acknowledge that the age range and number of users involved in the test limit the conclusions that can be drawn however the results provide indicative information on users' responses to these websites.

DISCUSSION

There is limited research on local eGovernment. Current literature does tell us is that the sector has not developed as quickly as other levels of government. While this research did not examine the status of state and commonwealth eGovernment in the same period, the analysis of local government services found that they were less mature than those offered by the higher levels of government. The purpose of the content analysis was to assess the initial state of local eGovernment and to examine the progress made over the period of the research. The research identified the types of services provided to the general public via the virtual counter of a local council. In summary the research found that in 2001:

- Local councils offered only a limited range of information and services. The vast majority of websites presented passive information about services rather than services accessing backend systems.
- It confirmed that few councils had moved into eGovernment despite initiatives from the state government.
- While the sector as a whole could be judge to have immature eGovernment services there were vast differences between councils. While this could be loosely equated to the size of the council (large metropolitan councils versus small rural councils) and their access to funds, it also highlighted the major differences in priorities of councils. While some councils had made significant progress, other councils of similar size had not started.
- Those services that were more mature generally did not involve a commercial transaction, that is, one where funds had to be transferred. With the exception of online payment of rates.
- Websites were dominated by governance type information such as council minutes. The material was primarily passive information with the Website extensively used as a way of communicating information about council business to the community.

The initial evaluation confirmed the local government sector was slow to take on eGovernment and highlights the significant difference in web-based services offered by different councils. It is clear that it is difficult to treat all those within the sector in the same way because councils were at different stages of development, they had different level of experiences, they had different eGovernment priorities and they faced different challenges.

Over the next three years the same Websites were examined to assess the progress of the councils. The usability testing explored the effectiveness of the information provided and those services from the users' perspective. The research found:

- A significant overall improvement in the local government sector in the maturity of web-based services to the public as depicted on the Websites. However the delivery of these services will be hindered by the poor quality of and accessibility of the information. The usability testing revealed that information provision generally, was regarded as inadequate by the users.
- Less marked differences between councils on the maturity of their web-based services. The differences that were initially evident were not present at the end of the research period. Less mature councils that had languished behind the leading councils had matured significantly.
- Website quality varies significantly from a usability perspective and is unrelated to where a council is located or its budgetary size. The best websites rated highly with the users on most or all of the areas evaluated and the poorest websites ranked poorly on most items.
- Councils were starting to show their priorities for web usage, particularly between the governance and service areas. Some councils with immature service delivery had sophisticated governance applications such as web casting of council meetings. Others were expanding payments into other functional areas but had done little with governance information.
- The quality of information is quite poor from a usability perspective. Users indicated they had difficulty finding all the information needed to complete the set tasks. For example almost 50% of users were unable to find information on paying dog registrations. Confirming the content analysis it

suggests that councils have focused on quantity, rather than quality and have not considered how to effectively distributed information.

- All councils were moving forward in specific areas through legislated state initiatives such as land certificates and graphic information systems meant that.
- There was an increasing exposure to backend systems in such areas as payments of services other than rates and the online ordering of products such as garbage bins. Significant progress still has to be made however in ensuring that areas such as payments can be made easily.
- The leading councils did not significantly change their e-service or other offerings. The content analysis revealed that there were some portals mainly around tourism involving local councils and more sophisticated systems such as GIS and ordering systems. This suggested that progressive councils were making advances to internal systems and processes that may also have been supporting existing offerings to the public via the council web page. This was consistent with the findings of the usability evaluations. Councils whose websites scored well tended to rank above average in all areas suggesting these councils have some understanding of how to design a web site and present information online to the community.

Given a financial incentive councils seized the opportunity to develop their websites further. Most councils now have a web presence and thus we see a dramatic rise in services and information provided on council websites between mid 2001 and 2002. The usability of these sites however, is still quite poor indicating that the focus has been primarily on getting the information and the services up on a website rather than on ensuring that services are accessible or usable. Half of all the council websites evaluated ranked below average in terms of quality.

Although funding was available there was little direction provided to councils on developing an Internet strategy or building effective websites. This has resulted in poor quality or ineffective websites. It is therefore difficult to treat councils as the same not because they are different in terms of eGovernment maturity but that their priorities reflected in their web pages are becoming more evident.

CONCLUSION

This paper reports on research that was designed to examine the progress local councils have made towards maturing the offerings on their web pages, and to examine the usability of these e-services from a community's perspective. The findings of the content analysis found that local councils' websites had progressed significantly over a four year period but that the services offered by individual councils varied significantly. Moreover, it found that the usefulness of those services also varied amongst individual councils. The findings suggest that there needs to be a more co-ordinated approach to development of local e-Government information and services if the true potential for electronic service delivery at this level of government is to be achieved.

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