EVALUATING THE USABILITY OF DEVELOPING COUNTRIES E-

GOVERNMENT SITES: A USER PERSPECTIVE

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Abstract

Government web sites of developing countries are pertinent since they are part of the e-government

efforts occurring on a global scale. The aim of this research is to investigate the usability issues of

government web portals of developing countries. The data was collected from a diverse range of

respondents. The main contribution of this paper is to identify the usability issues when implementing

government web portals. This is pertinent as web portals are the only feature and source of

information that people from various locations will obtain prior to visiting the country and may be a

decisive factor for an individual.

Keywords: E-Government, Developing Countries, Usability, Government Portals

1 INTRODUCTION

Information and Communication Technologies (ICTs) is a broad area of research that includes consideration of issues such as, the usage and adoption of the Internet. The Internet is considered to be an important new technology that has become part of daily life and has affected almost every aspect of the economy. Consequently, it is being viewed to be an enabling technology that can be used wisely or unwisely, in almost any industry and as part of almost any strategy (Porter, 2003).

Currently, Governments and public sector organisations around the globe have become aware of the potentials of ICTs; thereby triggering investments into e-government. The term "e-government" focuses on the use of information and communications technologies (ICTs) by governments as applied to the full range of government functions. In particular, the networking potential offered by the Internet and related technologies have the potential to transform the structures and operation of government (OECD, 2004). There are many varying definitions of e-government, but for the purposes of this research the Organisation for Economic Co-operation and Devlopment (OECD) definition of e-government is used: E-Government is "the use of information and communication technologies, and particularly the Internet, as a tool to achieve better government". Using this definition it can be understood that the impact of e-government is simply better government, by enabling better policy outcomes, higher quality services, greater engagement with citizens, and by improving efficiency, contributing to economic policy objectives and advancing the public reform agenda (OECD, 2004).

Through the years, there has been much cynicism of government services and resulting outcomes in terms of government and citizen relationships. This has often led to low public participation and trust in government services (Northrup and Thorson, 2003). In more recent times, governments, both, in developed and developing countries have begun to view online government services as being a solution to this problem; thereby leading to an increase in the numbers of countries developing an online presence (UN, 2005). For present purposes, a developing country is defined as a low or lower-

middle income country (World Bank's World Development Indicators database (2002). A UN Global survey (2005) found that the numbers of countries having an online presence had increased to 179.

The emergence of e-government started with initial efforts by governments to form online relationships with citizens using static web pages that disseminated various isolated pieces of information. However, as citizens became familiar to the web, they became 'web savvy' and governments then progressed to forming web portals. Web portals allow visitors to enter a state government web site and obtain online services delivery (Gant and Gant, 2002). A more intensive description is that web portals offer an integrated gateway, or main user interface into a website. "It provides both external constituents and internal government personnel with a single point of contact for online access to state information and resources" (Gant and Gant, 2002).

Since the view of governments and the services they offer are often negative, governments are keenly pursuing ways of eliminating that image by offering online services through e-government web portals (Northrup and Thorson, 2003). The Internet revolution on the other hand, has produced an information culture in which individuals (citizens) have access to, large amounts of data and information (Shapiro, 1987). Consequently, our research aimed to develop guidelines on the usability of e-government web portals of developing countries. As in the instance of previous studies on the development and evaluation of web sites (Petricek et al, 2006; Palmer and Griffith, 1998), the question that drives this and other recent e-government research (Gant and Gant, 2002) is to determine and increase the understanding of the usability issues surrounding an e-government portal. *Specifically, the purpose of this paper is to describe the issues related to the usability of state government web portals of developing countries.* By undertaking such research the contribution that is envisaged for countries is further development of developing countries economies as the tourism sector/s can recover by examining the issue of usability. For industry, we foresee the unique contribution as more knowledge of the usability issues. The benefit of this paper for academia is a richer understanding of the usability issues related to developing countries, where research is minimal.

Accordingly, the structure of this paper is as follows. Section 2 offers a theoretical understanding of the main issues surrounding this research. Thereafter a discussion of the research methodology and selection for the web portals is offered in section 3. Section 4 discusses the results of this research and section 5 concludes the paper.

1.1 E-Government and Developing Countries

Kolsaker and Lee-Kelley (2006) found that having a citizen at the center of e-government leads to success in the area. By failing to engage citizens in the e-government process there is a risk of alienating and excluding the deprived and vulnerable from the information society.

Nonetheless, there are many instances where e-government has failed, particularly, in developing countries. This is a disturbing fact, especially as developing countries have a limited number of resources available to them, and cannot afford to waste and spend large amounts of money, which is typical of such projects (Dada, 2006). Most implemented e-government initiatives in developing countries fail, with 35 percent being classified as total failures (e-government was not implemented or was implemented but immediately abandoned), and 50 percent as partial failures (major goals were not attained and/or there were undesirable outcomes) (Heeks, 2003). The problem that often arises with developing countries is that there is frequently a mismatch between the current and future systems, due to the large gap in the physical, cultural, economic, and various other contexts between the software designers and the place it is being implemented (Heeks, 2002).

Ciborra (2005) holds the view that that the notion of e-government on its own is not suited for developing countries to obtain the associated benefits. Instead political and social changes are required alongside the implementation of electronic mediums. Alternatively, there is an indication that an economy will be required to develop to a service delivery state or a minimal state (Kahn, 1997), where

failures due to governance breakdown, corruption, rent seeking, distortions in markets and the absence of democracy are addressed before e-government can be implemented within it.

Jaeger and Thompson (2003) assert that an e-government system can fail if the government does not take an active role in educating citizens about the value of e-government. E-government would also fail if the users do not have the ability to use the technology to enable access of useful information and services. This would lead to a low user base, as the system would not be equally accessible by all citizens. A low user base is a particularly significant problem in developing countries due to the chronic lack of qualified staff and training schemes, which are necessary conditions for the existence of successful e-government schemes (Ndou, 2004). The same stance has been taken by Basu (2004) who states: "there are insufficient numbers of people in developing countries trained in appropriate technologies...training opportunities are also straining to meet needs". The low rates of literacy in developing countries make this situation very difficult and costly to change, thus accounting for why e-government often fails in these countries.

2 USABILITY OF E-GOVERNMENT WEBSITES

Web usability became a particular focus of the Human Centered Interaction (HCI) communities housed within the Information Systems area from the 1990s (Nielsen, 1999). Websites were becoming pervasive within industry and daily lives thus the emphasis upon website evaluation. There are varying definitions of usability, but for the purpose of this research, the definition of usability is: "a process that employs participants who are representative of the target population to evaluate the degree to which a product meets specific usability criteria" (p. 25, Rubin, 1994).

As e-government Web sites have become a prevalent part of interactions between governments and citizens, this has led to more research into user-centered issues. With ever increasing levels of government information and services moving online and many government agencies offering many

functions exclusively online, agencies need to design e-government Web sites to ensure that universal access is afforded to all the users of the sites. Such initiatives have also led to regular evaluation of e-government websites by academic researchers (West, 2006; Petricek et al, 2006) and consultancy firms (Accenture, 2005). These evaluations are conducted upon both developing and developed countries web portals and evaluated issues include, accessibility, usability and best practice examples.

The impacts of e-government websites are of immense importance to e-government and Information Systems (IS) researchers as indicated by recent research (Akpinar. and Ondin, 2008; Dos Santos and Reinhard, 2007; Economides and Terzis, 2008; Magkos et al., 2007; Nwachukwu et al, 2008). Nwachukwu et al (2008) attempted to form a framework based upon whether a website has a web presence or not, and how active it is. Using more factual information and also a score developed by the researchers' conclusions were formed.

Whilst the above research determined the usage aspect as well, it was not as rigorous as this one. We are attempting to examine websites at a lower level by examining aspects of web design and evaluation as well. For this Bertot et al (2006) research was used. Bertot et al (2006) found 3 methodologies have become pertinent for user-centered evaluations of e-government web portals-Functionality, usability and accessibility (explained and shown in Table 1 below). HCI has a more user focused approach, which was of importance to our research as well. Usabillity is important for websites and HCI and we pursued this path for our research. Since the focus of this research is upon usability, the description of usbility was employed. However, we attempted to investigate the lower levels of usability and identified issues related to it, using prior peer reviewed HCI and IS research (stated in the subsequent sections and sub-sections).

Method	Purpose
Functionality	Assesses whether the system (or component) actually works in the manner it is intended and provides the results it is meant to deliver. Can be used to make comparisons between separate, comparable programs with similar goals.
Usability	Assesses how users react to and interact with the program. Can allow the user to express personal impressions of the resource, such as satisfaction, utility, value, helpfulness, benefits, frustration, and self-efficacy.
Accessibility	Assesses how well systems allow users with disabilities to have equal or equivalent use of information and services.

Table 1 Methodologies for e-government web portal evaluation

Source: Bertot and Jaeger (2006).

Usability is not a single, one-dimensional property of a system but contains multiple components. It is traditionally associated with five attributes: learnability, efficiency, memorability, errors, and satisfaction (Nielsen, 1993). Usability testing can be used to assess the extent to which a Web site enables users to intuitively access and employ the elements of a site. Usability testing focuses on the overall quality of experience for a user interacting with the site. Aspects of quality include, ease of use, efficiency of the site, memorability of elements of the site, and levels of satisfaction. Specific issues explored by usability testing can include determining: whether navigation and orientation are intuitive; elements of the site perform according to users' anticipation; elements of the site being clearly labeled; instructions being meaningful and easy to follow; and content being presented in a logical, clear and understandable manner (Bertot and Jaeger, 2006).

If these elements are interpreted in e-government terms, a citizen as well as a tourist require the assistance of a website at a certain point in time. Usability that relates to issues such as the satisfaction of an individual by employing a website can be determined. The satisfaction in turn can be determined by how well a person can move around a website, does the website have the labels to information. For example, is there a "Frequently Answered Section". Therefore, e-government and usability are crtical partners when examining e-government.

3 RESEARCH METHOD

Using Kling's (1978) reasoning of emphasising major stakeholders, this research emphasised citizens and government; groups that are considered major stakeholders of any e-government initiative. Therefore, we adopted a citizen-centric rather than business approach for our research, and these stakeholders will form one of the two main quality perspectives that this study adopts. This is also aligned to the techniques suggested for User Centered Design (UCD)(Rubin, 1994).

To determine the appropriateness of the questions contained in the questionnaire, a pilot was undertaken by sending the questionnaire to a small team of experts (10). The pilot questionnaire used questions based upon the aspects of usability as suggested by Bertot et al (2006). These questions were also applied in previous research undertaken by Choudrie and Ghinea (2005), but not applied as extensively as in this research. The previous research (Choudrie and Ghinea, 2005) applied a smaller sample and used web diagnostic tools for responding to the answers. This questionnaire was different as it was based on a Likert scale, used on a larger number of countries and involved a subjective viewpoint. An example of the questions used for this research is offered in Appendix 1.

As mentioned above, the pilot questionnaire was sent to an expert team comprising academics and industrial experts who were identified by examining the individuals' published work and/or industrial experience. The feedback responses from the experts led to minor changes within the questionnaire.

For the final step of the data collection process, the questionnaires were sent to 50 randomly and snowball sampled individuals (details in Table 2). The questionnaires consisted of 10 questions regarding each site and each participant was asked to examine 5 e-government web sites. Finally, the respondents answered 10 questions about five diverse websites (of the overall 50 web portals), which led to 5 diverse views about each portal. 50 e-government websites were selected due to the time limits. The categorisation for the e-government portals was based upon West (2006). This was because it was felt that the evaluation of sites without any category made this research's tasks difficult; thus applying West's (2006) categories. When determining the categories for application, apply there were other categories to consider, as prescribed by Waseda University and Accenture; but it was felt that ultimately, West's (2006) research was most detailed and recognised both within the academic and industrial communities. The final list used in this research is detailed in Table 3. To analyse the results of this research we used the commonly applied statistical analytical tool of SPSS v.15.

				Percent	
Measure		Item s	Frequency	(%)	
ivieasure		items	Frequency	(70)	
Gender		Male	27	54%	
Gender		Female	23	46%	
Total		remale 50	50	46%	
	TOLA				
		under 20	7	14%	
Age		20 – 29	18	36%	
		30 - 39	8	16%	
·		40 - 49	6	12%	
		50 – 59	4	8%	
		60 – 69	4	8%	
		70 or abo∨e	3	6%	
	Total	50	50	100%	
		Student	21	42%	
Occupation		Employed	13	26%	
		Self-employed	8	16%	
		Unemployed	4	8%	
		Housewife	4	8%	
	Total	50	50	100%	
Level of Education		Under Graduate	19	38%	
		Post Graduate	17	34%	
		vocationally trained	14	28%	
	Total	50	50	100%	
World Wide Web				·	
Experience					
·		None	0	0%	
		<6 months	0	0%	

Table 2: Demographics of the Participant

REGION	COUNTRY	REGION	COUNTRY
	Trinidad and Tobago		Palau
	Barbados	c	Cook Islands
au	Grenada	Oceal	Tuvalu
Carribean	Jamaica	Pacific Ocean	Vanuatu
0	Bermuda		Fiji
	Saint Lucia		Afghanistan
	Argentina		Bangladesh
rg.	Brazil		Cambodia
ımeric	Falkland Island		China
South America	Guyana		India
S		Asia	Thailand
	Swaziland	As As	DPR Korea
	Kenya		Nepal
	Nigeria		Pakistan
e	Egypt		Sri Lanka
Africa	Tanzania		Malaysia
	Namibia		Mexico
	Mauritius	Central America	Belize
	Poland		Bhutan
ed o	Bulgaria		Kazakhstan
Western Europe	Czech Republic	Asia	Turkmenistan
N este∣	Moldova	Central Asia	Uzbekistan
	Romania	0	Armenia
	Turkey		
#	United Arab Emirates		1
Middle East	Bahrain		
Mide	Qatar		
	Lebanon		

Table 3: The list of countries used for this research

4 DATA FINDINGS AND ANALYSIS

From the observations and questionnaires the data revealed several interesting observations. First, it was found that on average users displayed positive opinions with respect to navigation, layout, as well as the use of text and colours in the evaluation of e-government web portals. On the other side of the spectrum, the help and FAQ features were generally found to be inadequate. Moreover, what is noteworthy is the t-test analysis revealed that the responses to all questions were statistically significant (p<0.05), thereby confirming that the factors are important and significant for e-government web portal evaluation. In general terms, for an e-government website user as well as a developer, these results imply that attention to details such as the size of text, the colour of the text or layout of the information on a webpage is critical. As an example, if the font size is a point 9 and in yellow but on a background that actually hides rather than emphasizing the font and colour, then a user will be confused and eventually give up using the webpage and not obtain the required information, which has also been confirmed by our findings.

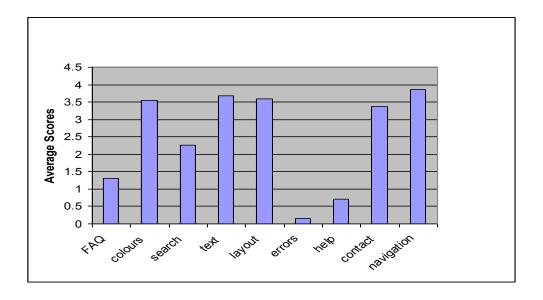


Figure 1: User Evaluation of E-government Portals in Developing Countries

When becoming specific to countries, our detailed investigations of these factors revealed that the Lebanese government web-portal had the best layout. This is a surprising revelation, given the turmoil normally associated with the country.

	Test Value = 3										
				Mean	95% Confide	ence Interval					
	t	df	Sig. (2-tailed)	Difference	of the Di	fference					
					Lower	Upper					
FAQ	-14.183	243	.000	-1.689	-1.92	-1.45					
colours	8.073	243	.000	.549	.42	.68					
search	-6.519	243	.000	738	96	51					
text	11.194	243	.000	.689	.57	.81					
layout	8.392	243	.000	.586	.45	.72					
errors	-86.998	241	.000	-2.851	-2.92	-2.79					
help	-25.435	243	.000	-2.295	-2.47	-2.12					
contact	3.463	243	.001	.369	.16	.58					
navigation	13.841	243	.000	.861	.74	.98					

Table 4: Analysing usability of the web portals

The usability issues considered in this research included, determining the navigation, search engine feature, text, colours, layout, frequently answered questions (FAQs), contact details and help. These are discussed further on.

4.1 Navigation

In the context of a website, navigation provides users with an idea of their location. For instance, with the navigation feature in a web page, users are aware of where he/she is, where they want to go and where they have come from (Mandel, 1997). Neilsen (1999) suggests that it is important for users to find the appropriate navigation features without making an effort, find differences between the available options and must have sense of what is behind the links. The results suggest that the selected

e-government web portals navigation system have been designed vigilantly as most of the participants rated the web sites highly (Figure 2). Fiji leads in this category with the highest positive rating. Armenia and Bermuda were in the bottom positions. **Note:** The ratings used for the figures and tables span the 1 to 5 range, based on the Likert scale used for the questionnaire.

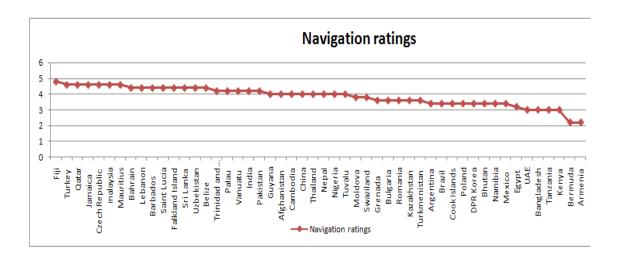


Figure 2: Navigation ratings

4.2 Search Engine

Nielsen (1999) suggests that task focused users normally use the search facility and more than half of all internet users use the search feature. This means that the search engine feature should be available on every single page of a web site (ibid). E-government websites consist of large amounts of data, which requires regular updating. In this case, a search engine can be very useful to find the relative information that users are interested in. From the observations and questionnaires it was revealed that 76 percent of the websites offered the search feature.

Further questioning about the search feature revealed that even though most of the selected countries' portals provided a search facility, the users were not particularly impressed by the functionality provided by the feature (Figure 3). To determine the importance of this feature, participants were

asked to use the search facility to obtain find information regarding vacationing in a country. As Figure 3 illustrates, quite a few countries' portal did not have a search engine facility. This was confirmed by the replies from a search returning, either 'no' results or links that were deemed as not very useful.

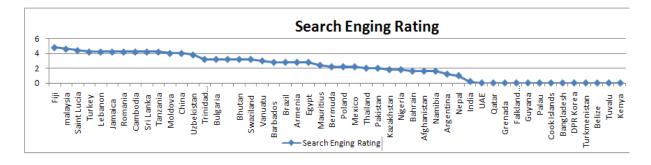


Figure 3: Countries search feature functionality

4.3 Text

Research has shown that reading online is 25 percent slower than a hard copy source (Nielsen, 1999). Therefore, it is critical to use appropriate font size, colour and style, which then allows a web page to be easily read and prevents confusion amongst users (ibid). For this research, it was pertinent to ensure that the text was clear and easily read on the web portals. Figure 4 highlights that most of the respondents were very positive about the text clarity. The Trinidad and Tobago portal leads in this category with an average rating of 4.6 and Bangladesh's portal was in the last position with a rating of only 2.2.

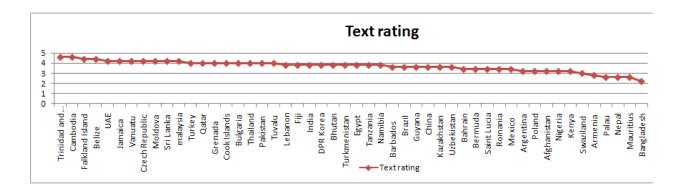


Figure 4: Rating the text of the web portals

4.4 Colours

As Nielsen (1999) found reading online material is also determined by colour. In this research it was found that the ratings given to the web portals were fairly high with the Fiji web portal leading and Grenada being last in this category (Figure 5).

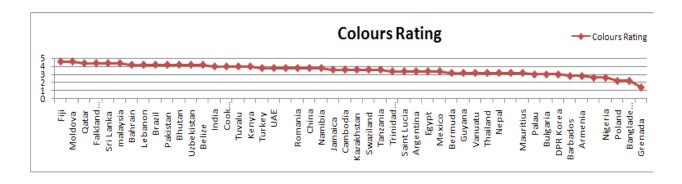


Figure 5: Rating the colours of the web portals

4.5 Layout

Layout refers to the structure of a web page. That is, how the contents of a page have been designed. Factors of consideration include, page width, page length, and placement of search features (Nielsen and Tahir, 2002). It is also suggested that an organisation's web page should reflect the user's view of

the site and its information and services rather then mirror the organisational chart (Nielsen and Tahir, 2002). While still mainly positive ratings were awarded to the developing countries' portals, the overall average was lower than that for navigation. The portal receiving the lowest ratings was that of Bangladesh (http://www.bangladesh.gov.bd/), which looks more like a directory containing a number of links without any structure.

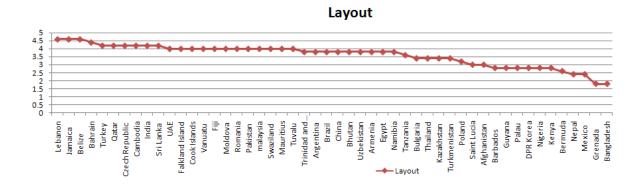


Figure 6: The layout of the web portals

4.6 Frequently Asked Questions (FAQs)

Frequently asked questions provide a means of retrieving important information in an easy and expedient manner (Koyani, 2001). Surprisingly, our survey results revealed that 64% of the considered web portals did not have FAQs (Figure 7). Given the complexity and wealth of information made available on government websites, this is a worrying situation. On the positive side, of those countries that had FAQs, users' experiences of them resulted in mostly positive ratings.

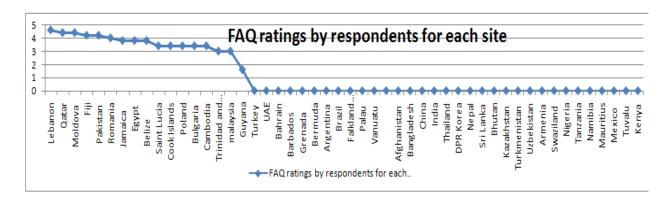


Figure 7: The FAQs of the developing countries web portals

4.7 Contact Details

Contact details are pertinent for any type of web site, as it increases the legitimacy of the information that the web site contains (Nielsen and Tahir, 2002). Although the overwhelming majority of countries' portals surveyed in our sample (45%) do provide contact details, there is considerable variation upon how contact information is interpreted: Some of the portals, such as, Pakistan provided links to the contact details of each department. In the instance of other web sites and portals, such as Bermuda, there were only contact details of the portal administrator. Argentina, also offered a form that the user could complete to submit queries of concern (Figure 8). However, there was a variation in the ratings as the participants preferred to contact a specific department rather than the portal administrator. Only a few of the selected e-government websites provided contact details of each of the departments.

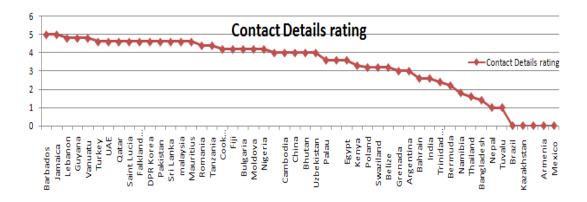


Figure 8: Ratings by the users of the contact details

4.8 Help

The main aim of the help feature of a portal is to provide a user with an understanding of how to use various features such as, the search engine or how to access different files; for example, a pdf or multimedia files. The analysis of the web portals revealed that only 24% of the selected portals offered help features (Figure 9), which is quite inadequate. Of the 12 countries that provided the help feature the Indian portal had the highest rating.

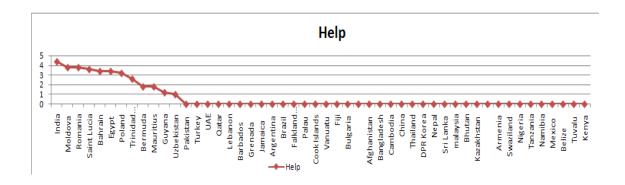


Figure 9: Rating the countries according to 'help'

Nielsen (1999) found that error messages are an important issue of web usability. Further, error messages should always be constructive and help users overcome a problem instead of simply

indicating the trouble (ibid). From the survey results it was learnt that only 9 web sites had an error message, which constitutes only 18% of the total websites and a very encouraging result.

Bermuda was the only web portal that managed to get a high rating as the error message gave an alternative to resolving a participant's problem. The reason for receiving these error messages was explored and it was found that this was attributable to the unavailability of a web page or a web page being under construction. After speaking to the participants' it was found that when an error message did appear, there was no provided alternative web address or web page, or a blank screen appeared, which made it difficult for a participant to obtain any information. Nielsen (1999) suggested that one redeeming factor of an error message display is the suggestion of what to do and in most of the researched web portals, this was not achieved.

5 CONCLUSIONS

Governments around the globe are aware of the potential offered by e-government, thus increasing their efforts into its provision. The provision of e-government has also led to the undertaking of research into various aspects of e-government by academics, industry and consultancy organizations. One view of e-government is the development and implementation of web portals and this research aimed to describe the issues related to the usability of state government web portals of developing countries. Previous research by Choudrie and Ghinea (2005) identified some of the usability issues of concern. In this paper we delved deeper by examining a larger list of developing countries usability issues by using a sample number of citizens, which was amiss in the earlier research.

There are several lessons that this research can offer. First, in terms of usability and addressing the aim of this research, it can be confirmed that usability is not a single faceted aspect, but involves various

issues of consideration for all the stakeholders, including the user and developer. Due to the aforementioned view, usability in the context of this research was considered from the user's viewpoint and several issues associated with it were dealt with. These included navigation, search engine feature, text, colours, layout, frequently answered questions (FAQs), contact details and help. From the research findings, it was concluded that on average users displayed positive opinions with respect to navigation, layout, as well as the use of text and colours in the evaluation of e-government web portals. On the other side of the spectrum, the help and FAQ features were generally found to be inadequate. Moreover, what is noteworthy is that t-test analysis revealed that the responses to all questions were statistically significant (p<0.05).

This research has found that there are several difficulties associated with the currently developed and implemented developing countries web portals. If the problems identified within this paper are not addressed, they can also lead to a low user base, which is a particularly significant problem in developing countries. Currently, developing countries are directing their efforts towards obtaining qualified staff and training schemes, for the existence of successful e-government schemes; however, if the web portals are also not usable then they can also lead to a lower user base; thereby, becoming an important factor for governments to consider and not to ignore. Although the results of this research cannot be generalized, it can be concluded that if developing countries continue to implement and develop their web portals at the current rate and without attending to the web portals emerging problems, then difficulties and setbacks can emerge. However, research such as the one offered by this paper and others in the future could assist in reducing the difficulties posed to the initiatives of such countries to become successful.

This research is also critical for e-government as it identifies areas of weaknesses and strengths within the developing countries and online products and services context. This means that with such results, developing countries can examine their web portals and improve them, both for their citizens and the tourists who would consider visiting developing countries in the future.

However, it has to be remembered that this research as in the instance of the usability of e-government web portals is in the emerging stages. For this reason, the usability of e-government web portals is still a subject of immense interest for academics and should be examined in an in-depth manner. It is therefore proposed that in the future a longitudinal study of the usability of e-government web portals should be undertaken. Future directions for this research lie in combining an information systems perspective to the usability aspect of e-government web portals.

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REFERENCES

Accenture (2005) Leadership in customer service: new expectations, new experiences. URL:

http://www.accenture.com/global/research_and_insights/by_industry/government _and_public_service/leadershipexperiences.htm [accessed 26.9.07].

- Akpinar, Y. and Ondin Z. (2008) Citizens' use and acceptance of e-government applications of Turkish social security institution, *Electronic Government, an International Journal* 5(4) 403 419
- Bertot, J. C., Snead, J. T., Jaeger, P. T., and McClure, C. R. (2006). Functionality, usability, and accessibility: Iterative user-centered evaluation strategies for digital libraries. *Performance Measurement and Metrics*, 7(1), 17–28.
- Bertot, J.C. and Jaeger, P.T. (2006). User-centered e-government: Challenges and benefits for government Web sites.
- Basu, S. (2004), "E-Government and Developing Countries: An Overview", *International Review of Law Computers & Technology*.

- Ciborra, C. (2005), "Interpreting e-government and Development Efficiency, transparency or governance at a distance?" Information Technology & People Vol. 18 No. 3, pp. 260-279.
- Choudrie, J. and Ghinea, G. (2005). Integrated Views of e-Government Web Site Usability:

 Perspectives from Users and Web Diagnostic Tools. *Electronic Government, an International Journal*, 2, (3), pp. 318-333.
- Dada, D. (2006). The Failure of E-Government in Developing Countries: A Literature Review. The Electronic journal of Inofmrtion Systems in Developing Countries. 26.
- Dos Santos, E.M. and Reinhard, N. (2007) Setting interoperability standards for e-government: an exploratory case study, *Electronic Government, an International Journal*, 4(4), 379 394
- Economides, A.A. and Terzis, V. (2008) Evaluating tax sites: an evaluation framework and its application, *Electronic Government, an International Journal*, 5(3), 321 344.
- Gant, J.P and Gant, D.B (2002), Web Portal Functionality and State Government E-Services,

 Proceedings of the 35th Hawaii International Conference on Systems Sciences, 2002.
- Heeks, R. (2002), "Information Systems and Developing Countries: Failure, Success, and Local Improvisations", the Information Society.
- Heeks, R. (2003), "Most eGovernment-for-Development Projects Fail: How Can Risks be Reduced?" iGovernment Working Paper Series, Paper no. 14.
- Heeks, R. (2004). eGovernment for Development : Basic Definitions Page. Viewed on October 10, 2004. Available at:
- http://www.sed.manchester.ac.uk/idpm/publications/wp/igov/igov wp15.htm
- Jaeger, P. T. and Thompson, K. M. (2003). "E-government around the world: lessons, challenges, and future directions". *Government Information Quarterly*. **20**, **(4)**: **389**-**94**.

- Kahn, M.H. (1997). "State failure in weak states: a critique of new institutionalist explanations", in Harris, J., Hunter, J., Lewis, C.M. (Eds), *The New Institutional Economics and Third World Development*, Routledge, London, .
- Kling, R.N. (1978). "Value Conflicts and Social Choice in Electronic Funds Transfer Developments", *Communications of the ACM*, 21 (8), pp. 642-657.
- Kolsaker, A. and L. Lee-Kelley (2006). Citizen-centric e-government: a critique of the UK Model. *Electronic Government: An International Journal*. 3, 2. pp. 127-138.
- Koyani, 2001. Optimizing the user experience. [Online URL]

 http://www.usability.gov/pdfs/chapter2.pdf [Accessed July 17th]
- Mandel, T. (1997). The Elements of User Interface Design. John Wiley & Sons, Inc, New York
- Magkos, E. Kotzanikolaou, P. and Douligeris, C. (2007) Towards secure online elections: models, primitives and open issues, *Electronic Government, an International Journal*, 4(3), 249 268
- Ndou, V.D. (2004), "E-Government for Developing Countries: Opportunities and Challenges", Electronic Journal of Information Systems in Developing Countries
- Nielsen, J. (1993) Usability Engineering, New York: AP Professional.
- Nielsen J. (1997), Style Sheets vs. Frames as Web Extensions. [Url] http://www.useit.com/alertbox/styles_vs_frames.html. Accessed 13 June 07.
- Nielsen J. (1999) Designing Web Usability: The Practice of Simplicity. New Riders Publishing
- Nielsen, J. and Tahir M. (2002) Homepage Usability: 50 Websites Deconstructed. New Riders Publishing.
- Northrup, T.A. and Thorson, S.J. (2003). *The Web of Governance and Democratic Accountability*.

 Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS).
- Nwachukwu, S. L., Khalil, S. M., Yigletu, A. and Andrews, D. R. (2008). A CROSS-NATIONAL ANALYSIS OF E-GOVERNMENT IMPLEMENTATION: A RESEARCH NOTE. Issues in Information Systems, V. IX, No. 2: 494-99.
- OECD (2004). The e-Government Project: Governance and the Role of the State. Directorate for

Public Governance and Territorial Development. Available at:

http://webdominol.oecd.org/COMNET/PUM/egovproweb.nsf

- Palmer, J. W. and Griffith, D. A. (1998). An emerging model of Web site design for marketing.

 Communications of the ACM. 41, (3): 44-51.
- Petricek, V., Escher, T., Cox, I.J., and Margetts, H. (2006). The Web Structure of E-Government:

 Developing a Methodology for Quantitative evaluation. 15th international World Wide Web

 Conference. Edinburgh, Scotland.
- Porter, M. E. (2003). The Strategic Potential of the Internet, In Strategic Information Management:

 Challenges and Strategies in Managing Information Systems. Third Edition. Edited by

 Galliers, R. D. and Leidner, D. E.Butterworth-Heinemann. Burlington, USA: 376.
- Rubin, J. (1994). Handbook of Usability Testing. Wiley & Sons, New York, USA.
- Shapiro, S. P. (1987). "The Social Control of Impersonal Trust", *The American Journal of Social Sociology*, 93, pp. 632-658.
- UN Global E-Government Readiness Report (2005).
- West D. 2006, Global e-government. [Online URL] http://www.insidepolitics.org/egovt05int.pdf
 [Accessed 05 Feb 07]

Appendix 1: An example of the questions used for this research

1.	(a) Can	you find the	e frequ	iently	aske	ed que	stio	ns section?	□ No	□ Yes	
1	(b) If ye	s how easy	was it	to find	the	infori	mati	on which yo	ou are lo	oking for.?	
		1	1	1							
		Difficult	1	2	3	4	5	Easy			

2. Do you think that the colours of the websites are visually appealing?

	Difficult	1	2	3	4	5	Easy	
								<u>I</u>
3. (a) Can y	ou find the	search	ı featu	re?		No	□ Yes	
3 (b) If yes	s how easy y	was it	to find	l the	infor	mati	on vou were	e looking for?
3 (0) II yes		ı	1		ı		T	
	Difficult	1	2	3	4	5	Easy	
4. What do y	ou think ab	out th	e text	of th	ne web	pag	ge? Is it easi	ily read?
	Difficult	1	2	3	4	5	Easy	
			<u> </u>					
5. What yo	ou do think a	about 1	the stri	actu	re (lay	out)	of the web	page?
	Difficult	1	2	3	4	5	Easy	
			ı	<u>I</u>				
6. (a) Did y	you get any	error	messaş	ges?	□ N	0	□ Yes	
6 (b) If yes	s then did yo	ou fina	d it eac	ier 1	to fiv t	he r	roblem?	
								I
	Difficult	1	2	3	4	5	Easy	
7. (a) Can	you find the	help	button	? (Y	es/no).		
7 (b) if yes	then use th	ne helr	o funct	ion	and se	ee if	it is easy to	o find the information you a
looking for		1					J 1-1	,
TOOKING TO		1 2	T _	_				
	Difficult	1	2	3	4	5	Easy	
		•	•	•				
8. (a) Was	it easy to fi	nd the	conta	ct de	etails?			

	1	2	3	4	5	Easy	
Difficult							
d contact th	ne auth	noritie	s, di	d you	get	the informa	tion that you required?
			,	J	U		3
ind the lang	guage	used c	n th	e web	site	thorough a	nd easy to understand?
D: CC 1/	1			4	-	Г	
Difficult	I	2	3	4	5	Easy	
y was it to r	nove	(navig	ate)	from	one	page to ano	ther?
Difficult	1	2	3	4	5	Easy	
		ı	ı		1		
ĭ	ind the lang	ind the language Difficult 1	Difficult d contact the authoritie d contact t	Difficult d contact the authorities, did contact the authorities, did ind the language used on the Difficult 1 2 3	Difficult d contact the authorities, did you and the language used on the web Difficult 1 2 3 4	Difficult did contact the authorities, did you get a find the language used on the web site did by the did by the language used on the web site did by was it to move (navigate) from one	Difficult discontact the authorities, did you get the information of the language used on the web site thorough a Difficult 1 2 3 4 5 Easy was it to move (navigate) from one page to another than the language used on the web site thorough a language used on the language used on the web site thorough a language used on the la