# A WEB PRESENCE ANALYSIS OF MALAYSIAN GOVERNMENT AGENCY WEBSITES

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**UNIVERSITI UTARA MALAYSIA 2005** 

# A WEB PRESENCE ANALYSIS OF MALAYSIAN GOVERNMENT AGENCY WEBSITES

A Thesis submitted to the Faculty of Information Technology in partial fulfilment of the requirement for the degree Master of Science (Information Technology), Universiti Utara Malaysia

By AZIZAH BINTI SARKOWI

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# **ABSTRAK**

Kerajaan Elektronik dilaksanakan untuk menyalurkan perkhidmatan elektronik kepada seluruh masyarakat melalui penggunaan laman web. kewujudan dan kredibiliti sesebuah laman web kerajaan adalah signifikan untuk menggambarkan reputasi agensi tersebut. Untuk itu, Pertubuhan Bangsa-bangsa Bersatu membangunkan Indeks Pengukuran Penilaian Web sebagai satu standard pengukuran yang menentukan kedudukan laman web kerajaan di bawah pertubuhan tersebut. Kajian ini memberi penekanan kepada tahap pembangunan laman web agensi kerajaan sebagai satu unjuran bagi perlaksanaan projek Kerajaan Elektronik di Malaysia. Objektif kajian ini adalah untuk mengenalpasti peringkat kewujudan laman web agensi-agensi kerajaan, kredibiliti laman web tersebut berdasarkan tarikh akhir pengemaskinian dan jumlah masa untuk memuat turun, dan mendapatkan webmaster mengenai masalah pandangan yang dihadapi pengemaskinian laman web tersebut. Pelbagai pendekatan digunakan di dalam kajian ini, antaranya kaedah pemeriksaan pada laman web yang terpilih, menganalisa laman web menggunakan automated web evaluation tools dan kaedah tinjauan menggunakan mel elektonik kepada webmaster. Sebagai satu kajian awalan, 74 laman web agensi kerajaan yang disenaraikan pada portal rasmi kerajaan Malaysia, myGovernment diambil. Dapatan kajian ini menunjukkan majoriti laman web agensi kerajaan berada pada Peringkat III ke IV. Kebanyakan laman web tidak mencapai kualiti yang dijangkakan, dengan hanya 31 peratus dikemaskini kurang daripada satu bulan dan 76 peratus menunjukkan kelemahan dari segi masa muat turun (melebihi 10 saat). Kajian ini juga mendapati 'kesukaran mendapatkan maklumat daripada pihak lain' adalah masalah utama yang dihadapi oleh webmaster di kebanyakan agensi kerajaan.

### **ABSTRACT**

Electronic government was implemented to deliver electronic services to various citizens through the websites. The presence stage and credibility of government websites is significant to reflect the reputation of each agency. Web Assessment Measure Index establish by United Nations is a standard measures used to rank the stage of official websites for every countries. This study focussed on the development stage of Malaysia's government agency websites as a projection of the implementation of e-Government project. The objectives are to identify the Malaysian government agency web presence stage, credibility factors based on the last updated period and downloading time, and the website updating problem from webmaster view. A multi-method approach was used to, such as inspection method on selected websites, URL analysis using automated web evaluation tools and e-mail survey to the webmaster. As an exploratory study, 74 government agencies website was derived from the Malaysia's government official portal, myGovernment. The findings shows that the majority of Malaysian government website presence in Stage III to V. Many of the website did not achieves the expected quality with only 31 percent which has been updated less than once a month and 76 percent are poor in downloading times (more than 10 seconds). This research also found that 'the difficulty to get information from others' is the major problem that webmaster faced in many government agencies.

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# LIST OF ABBREVIATIONS

ANAO Australian National Auditing Office

E-Government Electronic government

GVU Graphic, Visualization & Usability Centre

HCI Human Capital Index

ASPA American Society for Public Administration

ICT Information and communication technologies

MAMPU Malaysian Administrative Modernization and

Management Planning Unit

MCMC Malaysian Communication and Multimedia Commission

MCSL Malaysian Civil Service Link

MDC Multimedia Development Corporation

MOSTI Ministry of Science, Technology and

MSC Multimedia Super Corridor

NITC National Information, Communication and Technology

Cabinet Committee

OECD Organisation for Economic Co-operation and

Development

SAFAD Swedish Agency for Administrative Development

TII Telecommunication Infrastructure Index

UN United Nations

UNDPEPA United Nations Division for Public Economics and

**Public Administration** 

WMI Web Measure Index

WPMM Web Presence Measurement Model

# **CHAPTER 1**

# **INTRODUCTION**

# 1.1 Introduction

The penetration of the internet and information and communication technologies (ICT) has caused government around the globe become aware of its potentials and consequently utilized them into electronic services. The utilisation of ICT in providing improved services and products to the internal and external stakeholders can broadly refer to as Electronic government (e-Government).

In Malaysia, e-Government was implemented as one of the Multimedia Super Corridor (MSC) flagship in 1998. Its implementation aims at reinventing how the government works as well as improving the quality of interactions with citizens and businesses through improved connectivity, better access to information and services, high quality services and better processing systems.

# The contents of the thesis is for internal user only

### REFERENCES

- Australian National Auditing Office (ANAO), (1999), Electronic Service Delivery, including Internet use by Commonwealth Government Agencies. Retrieved September 27, 2005 from http://www.egov.vic.gov.au/pdfs/rpt18-00.pdf
- Backus, Michiel. (2001). E-Governance in Developing Countries. Retrieved September 27, 2005 from http://www.ftpiicd.org/files/research/briefs/brief1.doc
- Bertelsmann Foundation. (2001). Balanced e-government: Connecting efficient administration and responsive democracy. Retrieved September 27, 2005 from http://www.begix.de/en/studie/studie.pdf
- Bouch, A., Kuchinsky, A. and Bhatti, N. (2000), Quality is in the eye of the beholder: Meeting users' requirements for Internet quality of service, *CHI 2000*, 297-304. Retrieved August 27, 2005 from ACM Digital Library
- Brajnik, G.(2000)Automatic web usability evaluation: what needs to be done?. 6<sup>th</sup> conference on human factors & the web. Retrieved September 23, 2005 from http://www.dimi.uniud.it/~giorgio/papers/hfweb00.html
- Brun, R.E. (2005). Content Management and XML: the needed 2005. Retrieved August 27, 2005 from http://www.hipertext.net
- Chartier, J. & Gabler, S. (2001). Risk communication and government: Theory and application for the canadian food inspection agency. Canadian Food Inspection Agency Public and Regulatory Affairs Branch. Retrieved September 11, 2005 from <a href="http://www.inspection.gc.ca/english/corpaffr/publications/riscomm/riscomme.shtml">http://www.inspection.gc.ca/english/corpaffr/publications/riscomm/riscomme.shtml</a>
- Comnet-it. (2005). IT application for higher performance electronic government in Malaysia.http://www.comnet-it.org/pubs/newsletter/issue1/malaysia.html
- Deloitte Research. (2003). At the dawn of e-government: The citizens as customer. Retrieved September 27, 2005 from http://www.deloitte.com/dtt/research/0,1015,sid%253D23578%2526cid%253D31651,00.html

- DigitalGovernance.org. (2003). Building and sustaining democratic and accountable governance institutions using ict. Retrieved September 12, 2005 from http://www.cddc.vt.edu/digitalgov/gov-publications.html
- Dran, G.V. & Zhang, P.. (2002). A theoretical model of quality websites: a multi-disciplinary conceptualization. *Proceedings of Decision Sciences Institute 2002 Annual Meeting*. 315. 443-5617. Retrieved September 23, 2005 from http://www.sbaer.uca.edu/Research/2002/dsi/papers/121.pdf
- Dusting off the websites. (April 5, 2005). New Straits Times. Retrieved June 26, 2005, from NSTP e-media database
- Fang, Z. (2002). E-Government in Digital Era; Concept, Practice and development. *International Journal of Computer, The internet and management*, 10(2), 122. Retrieved August 11, 2005 from http://egov.alentejodigital.pt/Page13015/Outras/article1.pdf
- Fogg, B.J. & Tseng, H. (1999). The Elements of Computer Credibility. Proceedings of the CHI99 Conference on Human Factors and Computing Systems. 80-87. Retrieved September 20, 2005 from ACM Digital Library
- Fogg, B.J., Marsha.ll, J. & et.al (2001). What makes Web sites credible? A report on large quantitave report. Proceedings of the CHI2001 Conference on Human Factors and Computing Systems, 3(1). 80-87. Retrieved September 20, 2005 from ACM Digital Library
- Galbraith, S., & Davison, N. (2005). Quantifying the relationship between website download time and abandonment by users. Retrieved September 10, 2005 from http://www.red-gate.com/dotnet/more/understand\_wesite\_testing\_results.htm.
- Golubeva, A., Merkuryeva, I.., & Shulakov, N. (2002). Development of e-government in st. Petersburg: Evaluation of web sites performance and usability. Retrieved August 31,2005 from http://unpan1.un.org/intradoc/groups/public/documents/nispacee/unpan 017777.pdf
- Gonza'lez, F.J.M. & Palacios, T.M.B. (2004). Quantitative evaluation of commercial web sites: an empirical study of Spanish. *International Journal of Information Management*, 24, 313–328. Retrieved August 31, 2005 from http://www.elsevier.com/locate/ijinfomgt

- Graphic, Visualization & Usability Center (GVU). (1998). GVU's 9<sup>th</sup> WWW user survey. Retrieved September 20, 2005 from http://www.gvu.gatech.edu/user surveys/survey-1998-04/
- Heng, C. (2003). Woes of a Big Site: And How to Prepare Your Site for Growth. Retrieved August 27, 2005 from http://www.thesitewizard.com/archive/bigsitewoes.shtml
- Hiller, J. & Bélanger, F, (2001). Privacy strategies for electronic government, E-government series. Retrieved September 27, 2005 from http://www.endowment.pwcglobal.com/pdfs/HillerReport.pdf
- Hiller, J. & Bélanger, F. (2001) *Privacy strategies for electronic government*. Retrieved August 11, 2005 from http://www.endowment.pwcglobal.com/pdfs/HillerReport.pdf
- Howard, Mark, (2001), "E-Government Across the Globe: How Will 'e' Change Government?", Government Finance Review, August 2001, s.:6-9, http://www.gfoa.org/services/gfr/archives/2001/08/gfr0801.pdf
- Hupponen, P. (2004). Exploring the conceptions of Quality in public online services. Retrieved September 20, 2005, from http://peruna.fi/paula/thesis.pdf
- International Organization for Standardisation. (ISO) (1991). ISO/IEC: 9126 Information technology-Software Product Evaluation-Quality characteristics and guidelines for their use –1991. Retrieved August 27, 2005 from http://www.cse.dcu.ie/essiscope/sm2/9126ref.html
- Kim, P., Eng, T.R. & et.al. (1999). Published criteria for evaluating health related web sites: review. *BMJ*. 318. 647-649. Retrieved September 23, 2005 from http://bmj.bmjjournals.com/cgi/content/full/318/7184/647
- Kunst, K.H., Diederik, G., & et.al. (2002). Websites: survey of five common health topics (Accuracy of information on apparently credible). *BMJ*. 324. 581-582. Retrieved September 23, 2005 from http://bmj.com/cgi/content/full/324/7337/581
- Layne, K & Lee, J. (2001). Developing fully function e-government: A four stage model. Retrieved September 27, 2005 from http://www.entrue.com/knowledge/papers(PDF)/2/04.pdf
- Layne, K., & Lee, J. (2001). Developing fully functional: A four, e-Government stage model. *Government Information Quarterly*, 18, 122-

- 136. Retrieved August 11, 2005 from http://www.e-gov.gr/local/ism egov/resources-egov/Government%20Information%20Quarterly%20%20Developing%20Fully%20Functional%20eGovernment%20-%20A%204-Stage%20Model.pdf
- Malaysian Communication and Multimedia Commision (MCMC). (2005). Facts & figures, statistics & record. Retrived August 20, from http://www.cmc.gov.my/facts\_figures/stats/index.as.
- MAMPU. (2000). Garis panduan Malaysian Civil Service Link (MCSL) dan laman web agensi kerajaan. Retrieved June 26, 2005, from http://www.mampu.gov.my
- Melody, Y., Jennifer, I., & Audrey, M. (2003). Using automated tools to improve web site usage by users with diverse abilities. IT & society. 1(3). 195-236. Retrieved August 1, 2005 from http://www.ihttpandsociety.org
- Ministry of Science, Technology and Innovation (MOSTI). (2005). All government department was asked to update their web sites\_Retrieved Jun 20, 2005, from http://www.mosti.gov.my/opencms/opencms/MostePortal/NITC/kemas kini\_laman\_ web-bi.htm
- Ma,T.H., & Zaphiris, P. (2003). The Usability and Content Accessibility of the E-government in the UK. Universal Access in HCI. 760-764. Retrieved August 1, 2005 from http://www.soi.city.ac.uk/~zaphiri/Papers/HCII2003/HCII2003-Accessibility.pdf
- Mohamed, R.M. (2002). E-commerce and e-government: Platform for change and organisational transformation. Retrieved September 27, 2005 from http://unpanl.un.org/intradoc/groups/public/documents/APCITY/UNPA N003926.pdf
- Nah, F.F. (2004). A study on tolerable waiting time: how long are web users willing to wait? *Behaviour & Information Technology*, 23(3), 153-163. Retrieved August 11, 2005 from http://journalsonline.tandf.co.uk/(q0eijz45ziykcxz1ye15o245)/app/hom e/contribution.asp?referrer=parent&backt =issue,3,7;journal,9,58;linkingpublicationresults,1:100652,1
- Nielsen, J. (1996). Top ten mistakes in web design. http://www.useit.com

- Nielsen, J.(1998), Cost of user testing a Website. Alertbox for 3 May, Retrieved Jun 20, 2005, from http://www.useit.com/alertbox/980503.html
- Organisation for Economic Co-operation and Development (OECD). (2003). The E-government imperative. Retrieved September 27, 2005 from http://unpanl.un.org/intradoc/groups/public/documents/APCITY/UNPA N016380.pdf
- Persson, A., & Goldkuhl, G. (2005). Stage-models for public e-services investigating conceptual foundations. 2<sup>nd</sup> Scandinavian Workshop on e-Government. Retrieved August 11, 2005 from http://www.vits.org/publikationer/dokument/492.pdf
- Rogers, W. O. (2002). Electronic Governance: Re-inventing Good Governance. Retrieved September 12, 2005 from http://www1.worldbank.org/publicsector/egov/Okot-Uma.pdf
- Saranan Timbalan Perdana Menteri Malaysia. (2003, Jun 26). Berita Harian. Retrieved June 26, 2005, from NSTP e-media database.
- Schaffer, E. (2001). Acceptable computer response times. *UI Design Update Newsletter*. Retrieved June 26, 2005, from http://www.humanfactors.com/downloads/apr01.aspSelvidge, P.R., Chaparro, B., & Bender, G.T. (2000). The world wide wait: Effects of delays on user performance. *Proceedings of the IEA 2000/HFES 2000 Congress*. Retrieved September 17, 2005 from http://www.ingentaconnect.com/search/expand?pub=infobike://els/0169 8141/2002/00000029/00000001/art0004 &unc=
- Selvidge, P.R., Chaparro, B. and Bender, G.T. (2000), *The world wide wait:* Effects of delays on user performance, Proceedings of the IEA 2000/HFES 2000 Congress, 1-416-1-419. Retrieved September 12, 2005 from http://psychology.wichita.edu/hci/projects/WW%20Wait.pdf
- Statskontoret. (2000). The 24/7 Agency: Criteria for 24/7 Agencies in the Networked Public Administration. Retrieved September 27, 2005 from http://www.statskontoret.se/upload/publikationer/2000/200041.pdf
- Stock, H. (2000). IR Web site users say some leave a lot to be desired. *Investor Relations Business*, November 4.

- Travkin, D. (2004). Web Site Evaluation Methods Overview. Paper presented at Web Site Usability Seminar. Retrieved August 1, 2005 from http://wwwcs.uni-paderborn.de/cs/ag-szwillus/lehre/ws03\_04/WebUE/travkin/Web/
- The American Heritage® Dictionary of the English Language, Fourth Edition copyright ©2000. Updated in 2003. Published by Houghton Mifflin Company. http://www.thefreedictionary.com/credibility
- The Eighth Malaysia Plan: Administrative Improvements for Development. Retrieved Jun 20, 2005, fromunpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN017522.pdf
- Trkman, P., & Lindic, J. (2004). Evaluation of web pages. *Journal of Issues in Informing Science and Information Technology*, 1, 0773-0792. Retrieved August 11, 2005 from http://proceedings.informingscience.org/InSITE2004/104trkma.pdf
- Turns, J., Valeriano, M., & Adams, R.S. (2003). A benchmark study to identify best practice. *ASEE/IEEE Frontiers in Education Conference*. Retrieved August 27,2005 from EBSCOHOST database.
- UNDPEPA (2002). Benchmarking e-Government: A global perspective. Retrieved August 11, 2005 from http://www.eamericas.org/documentos/benchmarkingegov2001.pdf
- United Nations(UN). (2003). World Public Sector Report 2003. E-Government at the Crossroads. Retrieved August 11, 2005 http://unpan1.un.org/intradoc/groups/public/documents/un/unpan010302.pdf.
- UNPAN. (2004). UN global e-government readiness report 2004. Retrieved August 1, 2005 from http://unpan1.un.org/intradoc/groups/public/documents/un/unpan019207.pdf.
- Worldbank. (2002). A Definition of E-Government. Retrieved August 1, 2005 from http://www1.worldbank.org/publicsector/egov/definition.htm.
- Zaphiris, P., & Kurniawan, S.H. (2001). Usability and Accessibility of Aging/Health-Related Web Sites. In *Proceedings of the 9th International Conference on Human Computer Interaction*, Retrieved August 1, 2005 from http://www.soi.city.ac.uk/~zaphiri/Papers/hcii2001\_accessibility\_poster.pdf