Proceedings of The 2014 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS)

Towards Greener Globe Through Smart Technology

5-7 November 2014

Bali - Indonesia

Organized by:

Department of Electrical and Computer Engineering
Postgraduate Study in Electrical and Computer Engineering
Udayana University

Technically Sponsored by:

IEEE Indonesia Section

ISBN : 978-1-4799-6127-6

Copyright Page

2014 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS)

WELCOME MESSAGE

Welcome to the 2014 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS), held on 5 – 7 November 2014, in Kuta, Bali, Indonesia. The conference is organized by the Department of Electrical and Computer Engineering and Postgraduate Study in Electrical and Computer Engineering, Udayana University.

The ICSGTEIS 2014 provides forum for international researchers, experts, and students to share, exchange ideas, innovation, experience and the latest research in the field of Smart-Green Technologies. The conference provides opportunity to strengthen collaboration and networking among participants while enjoying the religious atmosphere and the unique traditional culture of Bali.

This conference covers a number of topics, including Energy and Power Engineering, Electronic Devices and Systems, Multimedia Telecommunications, and Software Engineering and Information Systems. All accepted papers have been selected through peer reviewing process. The conference secretariat received nearly 50 submissions and 22 papers have been selected for presentation. In addition to the paper presentations, the conference program also covers plenary lecture, workshop and social events.

I would like to take this opportunity to thank keynote and workshop lecturers for sharing the latest research and development in the area of power cables. I also would like to thank the IEEE Indonesia Section for their continuous support. Many thanks also go to the technical program and the organizing committees, as well as to all the participants. Without your support, this conference would not be possible.

I wish you all have a successful conference.

Professor Ida Ayu Dwi Giriantari
ICSGTEIS 2014 General Chair

ORGANIZING COMMITTEE

General Chair:

- Ida Ayu Dwi Giriantari

Co-Chair:

- W. G. Ariastina

General Secretary:

- N. M. A. E. Dewi Wirastuti

Publication:

- I M. Arsa Suyadnya

Secretariat:

- I. B. Alit Swamardika

Finance:

- N. Budiastra
- I W. Sukerayasa

Sponsorship:

- I M. Oka Widyantara

Local Program:

- I N. Satya Kumara
- I N. Setiawan

TECHNICAL PROGRAM COMMITTEE

- Linawati, Ph.D (Indonesia – Chair)
- Prof. A Min Tjoa (Austria)
- Prof. Hugh Outhred (Australia)
- Dr. Toan Phung (Australia)
- Prof. Syed Islam (Australia)
- Dr. Maria Retnanestri (Australia)
- H. E. Orton (Canada)
- Prof. Uwe Rehling (Germany)
- Prof. Tsuyoshi Usagawa (Japan)
- Prof. Wei-Chung Teng (Taiwan)
- Prof. Emmanouil M. Tentzeris (USA)
- Yoga Divayana, Ph.D (Indonesia)
- Prof. Ontoseno Penangsang (Indonesia)
- Dr. Yoyon K. Suprapto (Indonesia)
- Prof. Suwarno (Indonesia)
- Dr. Tumiran (Indonesia)
- Dr. Lukito Edi Nugroho (Indonesia)
- Prof. Rudy Setiabudi (Indonesia)
- Prof. Dadang Gunawan (Indonesia)
- Dr. Hermawan (Indonesia)
- Prof. Gamantyo Hendrantoro (Indonesia)
- Prof. Rukmi Sari Hartati (Indonesia)
- Prof. Suprapta Winaya (Indonesia)
- Prof. M. Ashari (Indonesia)
- Dr. Asvial (Indonesia)
- Dr. I Wayan Mustika (Indonesia)
- Dr. Nyoman Gunantara (Indonesia)
- Dr. Agus Dharma (Indonesia)
- Dr. Made Sudarma (Indonesia)
- Dr. I M. Yulistya Negara (Indonesia)
- Dr. Wayan Nata Septiadi (Indonesia)

TABLE OF CONTENTS

Website Content Management Analysis of E-Government in Bali Province According to the Ministry of Communications and Information Guide

Linawati
Electrical Engineering Department
Udayana University
Bali, INDONESIA

Gerson Feoh
Information Engineering Facutly
Dhyana Pura University
Bali, INDONESIA

Ni Made Ary Esta Dewi Wirastuti
Electrical Engineering Department,
Udayana University
Bali, INDONESIA

Abstract— **Theoretically measuring the success of e-Government implementation is the same as measuring e-commerce of privates' sites services. Currently, all local governments in Bali have developed their own websites. However some of the websites have no well maintain. Therefore this study aims to analyze of the web site content management of local government in the Province of Bali using measurement method of SEO and the guidelines of the Ministry of Communications and Information of Republic of Indonesia. The result shows that the official website of Denpasar City is the top rank and the website of Jembrana Regency has the lowest rank.**

Keywords - Content Management, e-Government, Bali Province

I. INTRODUCTION

Concrete manifestation of the application of e-government which has been carried out and regulated for common practice in Indonesia is a manufacture of local government web sites. E-Government (E-Gov) is essentially the process of utilization of technologies of information as a tool to help run the government system more effectively and efficiently [1]. Website development for the government in the province of Bali which is an implementation of the Presidential Instruction No. 3, Year 2003, states that the contents to promote the use of information technology to support government activities and services. E-Gov websites of Bali Province consists of 8 (eight) District Government website, 1 (one) Municipal Government web site, and one (1) Provincial Government website [2]. However, to date analysis of web site content management e-Gov district, city and province in the Province of Bali has never been done. In this study, measurement of content management for the websites uses the unit of analysis and categorization according to the Ministry of Communication and Information of Republic of Indonesia or KOMINFO guidance to e-Gov services respectively [3]. Then the online measurement metrics using free tools such as link popularity checker Alexa Rank for traffic link popularity, SEOQuake for keyword density and page rank, and Tools.Pingdom.com for speed of access and the quality of the page size of e-Gov web site [4]. Finally, a comparison e-Gov implementation ranking of all local government in Bali Province based on their website content management is shown.

II. RESEARCH METHODS

The research method used in this study is descriptive qualitative method by doing observation completely of the content and *online* measurement carried out on May 2014 until June 201. The method is applied to obtain information about the current state and the links between existing variables.

A. Data Collection

In this study, data of check list content, online measurement and weighting of the unit of analysis and categorization on the website of all local government in the Province of Bali is collected [5]. Furthermore, the data associated with information relating to e-Government guidelines which have been described by the Ministry is recorded too.

B. Data Processing

Data processing is done to achieve the research objectives and obtain the solution of existing problems. There are four process in analyzing the website, i.e. the Alexa Rank process, the SEOQuake process, the tools.pingdom.com process, and the guideline process form the Ministry.

-. *Measurement Using the Alexa Rank* [6]

By using the tool Alexa Rank which can be accessed at www.alexa.com, the measurement results for duration of 6 months are obtained. There are eight main variables with several sub-variables to measure traffic link popularity which

was conducted from March 27, 2014 until May 13, 2014 as shown in Table 1.

TABLE 1. VARIABLE MEASUREMENT OF *LINK* POPULARITY BASED ON THE *ALEXA RANK*

VARIABLE	DESCRIPTION
Traffic Ranks	The process of counting and sorting the results of the ranking of web based on combination of average daily visitors globally and nationally.
Bounce Rate	Analysis of web traffic visit to see the percentage of visitors who enter the site and then "bounce" (leave the site) and the time length of the web site is accessed.
Audience Demographics	Describe the demography of visitors based on gander,, education, and location.
Audience Geography	Illustrates the location of visitors accessing the website.
Search Traffic and Top Keywords from Search Engines	Amount in percent of the keywords searched and lead to this website.
Upstream Sites	Presenting other web sites that were accessed before accessing the website.
Linking sites	The number of web sites that are connected and lead directly or indirectly to the main website.
Subdomain	The top shows a subdomain of the website most frequently accessed by visitors.

-. *Measurements Using SEOQuake [7]*

The use of keywords frequently in the *meta keywords* able to make the keyword *density* is high. However it can be worse for the *page rank* as it can be considered as SPAM. For the *keyword, it is* recommended the minimum *density* of 3% and maximum density of 5%. The density can be measured using *SEOQuake tool.* The measurement was conducted on May 13, 2014 as shown in Table 2.

TABLE 2. VARIABLE MEASUREMENT WITH SEOQUAKE TOOL

VARIABLES	DESCRIPTION
Page Ranking	Position of the web site on the popular search engine such as Google, Yahoo, etc.
Keywords	Benchmarking websites that have the same keyword with other websites.
Keywords Density	Keyword Density is found by dividing the number of times a keyword appeared on a web page for the number of words contained in the specific web page and multiplying the result by 100.

-. *Measurements Using Tools.Pingdom.com [8]*

Speed of access to *the* website and *page size* are important factors to measure *link* popularity of a web site that depend on *bandwidth* of a *hosting* [9]. Therefore *tools.pingdom.com* is used to measure *link* popularity of the website based on the speed of access and the quality of the *page size.* Table 3 displays measurement variables of the tool. The measurement was conducted on May 13, 2014.

TABLE 3. VARIABLE MEASUREMENT OF LINK POPULARITY USING *TOOLS.PINGDOM.COM*

VARIABLE	DESCRIPTION
Load time of a web page	Access time of a web site in seconds when accessed from a particular country.

-. *Evaluation of Content Management using The Ministry Guideline*

The results of online measurements for the *link* popularity [10] were obtained, thus the measurement is followed by an analysis of the completeness of content management using the guidelines of the Ministry KOMINFO (2003) [4]. Table 4 shows the guidelines.

TABLE 4. THE GUIDELINES OF CONTENT MANAGEMENT ACCORDING TO THE MINISTRY (KOMINFO)

VARIABLES	ANALYSIS CATEGORIES
Website Content	Latest local news, Tourism information, Profile of information area, Information of municipal facilities, Information on investment opportunities, Information of activities of the program, Email or phone number of the Authorities, Facilities for documents downloading, Legal Product, and search facility
E-Government Readiness	Availability of online public services, Online Polls dan surveys, Online interactive facilities with local government, Facilities of online payment, Facilities of suggestion box or Guest Book, Transparency information of Financial Local Government

III. RESULT AND DISCUSSION

This study consists of five main stages of analysis process. The first process is the online calculation of parameters of the link popularity of the websites, then the second process is to do check list of variables according to the Ministry guideline. Thirdly, to do weighting the unit of analysis and categorization using online calculation results of the link popularity and the categorization of content management according the Ministry guidelines. Then the fourth process is to do rank calculation according to the content management analysis of the Ministry guidelines. Finally, the fifth process is to do ratings comparison of the web site content management.

By using *online* measurements based on the Alexa Rank, *link* popularity traffic of all local government in Bali Province is obtained shown in Table 5.

TABLE 5. THE LINK POPULARITY OF LOCAL GOVERNMENT IN PROVINCE OF BALI WEBSITES BASED ON THE ALEXA RANK

Popularity Ranking	Local Government Website in the Province of Bali	Traffic
1.	www.baliprov.go.id	4.887
2.	www.karangasemkab.go.id	6.359
3.	www.denpasarkota.go.id	6.983
4.	www.jembranakab.go.id	7.378
5.	www.badungkab.go.id	12.892
6.	www.bulelengkab.go.id	17.843
7.	www.gianyarkab.go.id	26.258
8.	www.banglikab.go.id	44.998
9.	www.tabanankab.go.id	49.868
10.	www.klungkungkab.go.id	(>100.000)

-. *Analysis Using SEOQuake Tool*

Table 6 shows results using online measurements based on SEOQuake tool. The table displays keyword density of the websites.

TABLE 6. KEYWORD DENSITY OF LOCAL GOVERNMENT IN PROVINCE OF BALI WEBSITES BASED ON SEOQUAKE TOOL

Popularity Ranking	E-Gov Website	Keyword Density	Keywords
1	www.gianyarkab.go.id	5,88%	Gianyar
2	www.tabanankab.go.id	5,79%	Tabanan
3	www.denpasarkota.go.id	5,51%	Denpasar
4	www.baliprov.go.id	4,45%	Bali
5	www.bulelengkab.go.id	4,11%	Buleleng
6	www.klungkungkab.go.id	3,94%	Klungkung
7	www.banglikab.go.id	3,55%	Bangli
8	www.badungkab.go.id	2,63%	Badung
9	www.jembranakab.go.id	2,27%	Jembrana
10	www.karangasemkab.go.id	1,75%	Karangasem

-. *Analisys Results using Tools.Pingdom.com tool*

By using online measurements of tools.pingdom.com, the load time of the websites is obtained as shown in Table 7.

TABLE 7. RESULTS ANALYSIS OF LOADING TIME OF THE WEBSITES LOCAL GOVERNMENT IN PROVINCE OF BALI USING TOOLS.PINGDOM.COM

Popularity Ranking	E-Gov Website	Load Time (sec)	Page Size (kB)
1	www.tabanankab.go.id	4.46	3000.0
2	www.banglikab.go.id	5.36	143.9
3	www.klungkungkab.go.id	7.16	530.2
4	www.gianyarkab.go.id	9.69	1400.0
5	www.badungkab.go.id	10.93	175.2
6	www.denpasarkota.go.id	12.32	691.3
7	www.karangasemkab.go.id	13.59	533.7
8	www.baliprov.go.id	15.32	477.2
9	www.jembranakab.go.id	20.28	2600.0
10	www.bulelengkab.go.id	31.85	2000.0

-. *Weighting Analysis and Categorization of Content Management of The Websites according to The Ministry (KOMINFO)*

The next process is to do weighting process of the results. The value of the weighting based on the weight parameters and content management evaluation of previous studies [11], i.e. weight of 35% for *traffic ranking,* weight of 20% for *keywords density*, weight of 15% for *loading* time, weight of 15% for the *website content,* and weight of 15% for *the e-Government Readiness* [12], as shown in Table 8.

TABLE 8. WEIGHTING AND CATEGORIZATION OF THE WEBSITE

Parameter	Weight (%)	Range		
		Low (7-10)	Medium (4-6)	High (1-3)
Effectiveness	55			
Traffic Rank	35	11	24	35
Keywords Density	20	6	12	20
Speed	15			
Loading Time	15	4	10	15
Website Content	15			
Newest Information Regency	2			
Tourism Information	2			
Profile Information	1			
Potency Information	1			
Facility Information	2			
Investment Information	2			
Activity and Program Information	1			
Email and Phone (Contact)	1			
Download Facilities	1			
Law Information	1			
Search Engine	1			
E-Government Readiness	15			
Online Services	3			
Polling and Online Survey	2			
Interactive Facility	2			
Online Payment	3			
Guest Book and Recommendation	2			
Transparency of Finance of Regency	3			

The results of the websites analysis based on the weighting completeness as shown in Table 8, can be seen in Table 9. Table 9 displays in detail the results of the content management of the web site www.baliprov.go.id.

TABLE 9. WEIGHTING ANALYSIS OF CONTENT MANAGEMENT CATEGORIZATION FOR WWW.BALIPROV.GO.ID

	Parameters	Weight (%)	Range		
			Low (7-10)	Medium (4-6)	High (1-3)
PROVINCE of BALI (www.baliprov.go.id)	*Effectiveness*	47			
	Traffic Rank				3 5
	Keywords Density			12	
	Speed	4			
	Time Loading		4		
	Website Content	15			
	Latest Local News	2			
	Tourism Information	2			
	Regional Profile Information	1			
	Profile Information	1			
	Information of City Facilites	2			
	Information of Investment Opportunities	2			
	Regional Activities Program Information	1			
	Email or Phone Number of Local Official	1			
	Facilities of Documents Download	1			
	Legal Products	1			
	Search Engine Facility	1			
	E-Government Readiness	12			
	Online Availability of Public Services	3			
	Polls and Surveys Online	2			
	Interactive Online Facility with Local Government	2			
	Online Payment Facilities	-			
	Facilities of Suggestion Box or Guest Book	2			
	Transparency Local Government Financial Infromation	3			

From table 9, it can be seen that the website www.baliprov.go.id has effectiveness of 47%, speed of 4%, the content of 15% and 12% for e-Government Readiness. Thus the weight total for the website is 78%. The process is then continued to do weighting process for all local government websites. The final results of the websites ranking can be seen in Table 10. It can be seen that the website of denpasarkota has the same rank as the websites of baliprov, and gianyar in term of the content management analysis. Finally as the website of denpasarkota is on the top ranking, it implies that Denpasar City has implemented e-government better than other regencies in the Province.

TABLE 10. THE WEBSITES RANKING ACCORDING THE WEIGHTING ANALYSIS BASED ON THE MINISTRY GUIDELINES

Ranking	Web SIte of e-Gov in Bali Province	Effectiveness	Speed	Website Content	E-Gov Readiness	Total (%)
1	www.denpasarkota.go.id	55	10	15	13	93
2	www.baliprov.go.id	47	4	15	12	78
3	www.tabanankab.go.id	31	15	15	8	69
4	www.gianyarkab.go.id	36	10	15	8	64
5	www.bulelengkab.go.id	36	4	15	9	64
6	www.banglikab.go.id	17	20	15	12	64
7	www.badungkab.go.id	30	10	15	8	63
8	www.karangasemkab.go.id	41	4	13	2	60
9	www.klungkungkab.go.id	23	15	14	8	60
10	www.jembranakab.go.id	30	4	14	8	56

IV. CONCLUSION

Conclusion of this research is that Denpasar City is the best among other regencies in the Province of Bali for e-Government implementation. This has been approved by the city website ranking. Thus the results suggest that other regencies should improve their websites management in order to improve their e-government.

REFERENCES

[1] Silfianti, Widya.,e.al. 2010. Model Pemeringkatan Website Daerah di Indonesia. [Online] Available : http://repository.gunadarma.ac.id/bitstream/123456789/6396/1/Metode%20pemeringkatan%20website%20pemerintah%20daerah%20di%20indonesia.pdf. Accessed on :19th August 2013

[2] _____. (2013). "Alamat website Provinsi Kabupaten dan Kota di Indonesia". [Online] Available : http://www.sijunjung.go.id/datapdf/alamat_ website_provkabkota.pdf. Accessed on : 20th November 2013

[3] Raphael, Nugraha Sumesta., Mario Ardi Liguna.,Yudhi Kristian. (2013). "Analisis Dan Implementasi Strategi E-Marketing Berbasis Sostac Pada Pt. Balindo Mitra Usaha". [Online] Available : http://library.binus.ac.id/SearchResult.aspx?keyword=aeho6Okk+ZPpgBLtg6KRJBmUw35CrQbjEXJwkBemx/tc0CpTvCz2madFgfx8tSww&includeall=1&media=3. Accessed on : 20th November 2013

[4] Sosiawan, Edwi Arif. (2008). "Evaluasi Implementasi *E-Government* pada Situs *Web* Pemerintah Daerah di Indonesia : Perspektif *Content* dan Manajemen". [Online] Available : http://edwi.dosen.upnyk.ac.id/manajemen%20egov.pdf. Accessed on : 28th October 2013

[5] Wadjdi, A.F. 2011. "Model Benchmarking Popularitas Electronic-Government (E-Gov) Berbasis Web". [Online] Available : www.balitbang.kemhan.go.id/?q=content/model-"benchmarking"-popularitas-electronic-government-e-gov-berbasis-web. Accessed on : 5th July 2013.

[6] ____(2014). Alexa Rank. [Online]. Available : http://www.alexa.com

[7] ____(2010)."SEOQUAKE". [Online] Available: http://www.tutorialdigital.com /2010/ 02/seoquake.html.

[8] _(2014) Tools Pingdom Com. [Online]. Available : http://tools.pingdom.com/

[9] Karim, Akbar. 2011. "Analisis Popularitas Situs Web Di Indonesia : Studi Kasus Situs Web Pemerintah Daerah Tingkat Provinsi, Kota Dan Kabupaten. Universitas Gunadarma". [Online] Available : http://www.gunadarma.ac.id/library/articles/ postgraduate/information-system/Perangkat%20Lunak%20Sistem%20Informasi/Artikel_92307003.pdf. Accessed on :29th August 2013.

[10] Farida (2013). "Analisis E-Government pada Kabupaten/Kota di Indonesia". [Online] Available : https://www.google.co.id/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBwQFjAA&url=http%3A%2F%2Ffarida.staff.gunadarma.ac.id%2FDownloads%2Ffiles%2F32937%2FAnalisis%2BE-Government.docx&ei=J-nNU-vUHub6igKy4IGgBA&usg=AFQjCNGVfQ5zsvnMKdcPSYbgD0Dk3OOjGg&sig2=LELSsQ3-E7H3-E_MXxYeJw&bvm=bv.71198958,d.cGE. Accessed on : 2nd October 2013

[11] Marlina, (2010). "Tahap – Tahap *E-Government"*. [Online] Available : http://lynalyna.files.wordpress.com/2010/04/tahap-e-government2.doc. Accessed on : 13th October 2013

[12] Wadjdi, A.F. (2011). "Model *Benchmarking* Popularitas *Electronic-Government* (*E-Gov*) Berbasis Web".[Online] Available : www.balitbang.kemhan.go.id/?q=content/model-"benchmarking"-popularitas-electronic-government-e-gov-berbasis-web. Accessed on : 10th October 2013.

AUTHOR INDEX