WEBSITE EVALUATION MEASURES, WEBSITE USER ENGAGEMENT AND WEBSITE CREDIBILITY FOR MUNICIPAL WEBSITE

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ABSTRACT

This paper attempts to explore website evaluation measures specifically for information driven website such Municipal electronic government website toward website credibility and user engagement. Despite overwhelming of information source in online environment, the role of government website as a prominent government information provider becomes less preferred. Even, rapid development and continuous assessment been done by the government bodies to enhance and make utilize their website by the users, issues such usability problem, low popularity ranking and less user engagement still been reported. Therefore, the first part of this article reviews on existing assessment measures for websites done by scholars and also by practitioners. Then, in the second part of this article presents some finding on self evaluation of ten municipal website around Klang valley, Malaysia in term of popularity ranking and user engagement measure (bounce rate, Daily Pageviews per Visitor, and Daily Time on Site). Through related literatures reviewed, less study done previously includes overall or multiple measures for evaluation of information driven website. Estimation result of popularity ranking and user engagement percentage among municipal website also shows that there is still need some improvement to make the gateway of Malaysia electronic government become more favorable and engaging.

Keywords: user engagement, website evaluation, government website, municipal website, website credibility.

INTRODUCTION

In the early 1990s, World Wide Web phenomena been introduced and website become the main medium of information repositories on web environment. Initially website was static which only contains a plain hypertext markup language (Jiang, Chen and Tao, 2012) to structure the information and to be viewed by web user. Then evolution start with social web (or interactive content on the year 2000 to 2010 whereby web user can interact with the web using keyword search tools (Ramachandran, 2014). Then, within the year 2010, a semantic web was keep evolve and website become more meaningful in term of information processing and delivering information which let web user to retrieve the information based on the data they input. Next, on the year of 2020 onwards, web evolution been forecast to go for intelligence web where web document such website embedded with natural language and semantic search and concept of reasoning been apply.

Nowadays, Website has become a crucial medium in the online environment for presenting the information and delivering the informational services. Website become part of organizational strategic tool for generating revenue ranging from corporate sector, government ministries to municipal, nonprofit organizational, semi-structure company and even in small business (Poh and Adam, 2002); (Chiou, Lin and Perng, 2010). In term of government website, its play a vital role not only as a gateway to electronic government in accessing information and services related to specific department and agencies, but also should become the primer source of information for government in online environment.

Most website studies focusing more on e-commerce or business related website (Savoy & Salvendy 2008), (Horrall and Cavanagh, 2014) and this type of website was easier to measure in term of transactional based or monetary oriented (Stolz, Viermetz, and Skubacz, 2005). It differs with assessing the outcome of information driven website that not only reliable with countable value measure. Then in detail, classification of the website can be based on commercial, service and mix type website (Cebi, 2013) whereby in service website the author differentiates between information websites and e-government website. Information website provides users to retrieve useful information more quickly and more easily whereas e-government website falls under self-service websites that provide customer with information and certain operations or transactions. Whichever what type of website, most assessments been done before were to measure ease of use and information quality (Chiou, Lin and Perng, 2010).

Specifically, on government website matters, some studies showed local government websites experience low frequency of use (Detlor *et al*., 2013) or not reflecting more than half of citizen of the country (Wang, 2014). One influence factors of low utilizing of government website is information quality (Detlor *et al*., 2013). In grounded study, (Wang, 2014) found usability was the critical influential factor of website utilization in many studies. Despite this, two repetitive issues arouse during website evaluation were found at least one problem of usability and accessibility such as speed, broken link and error page not found (Latif and Masrek, 2010); (Wan Mohd Isa, Safie, and Semsudin, 2011); (Sullivan and Matson, 2000). This also supported by (Huang, Brooks, and Chen, 2009) and (Dominic, 2011) that broken links

can give bad impact for the credibility of a website. In addition, (Sullivan and Matson, 2000) also found correlation on both usability and accessibility either on top rank or low rank of popular website in World Wide Web. Thus, on the next section this paper explores on website evaluation measures on website credibility and website engagement, follow by determining current assessment method done by government bodies and at the end presenting some finding on municipal government website popularity ranking and level of user engagement to portray the real status of website preferred.

LITERATURE REVIEW

a) Website user engagement

Engagement been defined as a "state of being involve, occupied, retained and intrinsically interested in something" (Pagani and Mirabello, 2011). In the context of online game, user engagement been defined as the emotional, cognitive and behavioral connection that exist at any point in time and possible over time between user and resources (Attfield, kazai and Lalmas, 2011). They also mentioned a successful technology must have beyond usage and fulfilling the user investment in term of time, attention and emotion. Some researchers relate the definition of user engagement with user experience (Obrien & Cairns, 2015); (Lehmann, Lalmas & Dupret, 2012) which includes characteristics such increase attention, positive effect, sensory and intellectual satisfaction and mastery. The total engagement experiencing by users also known as focused immersion measure in cognitive absorption dimension where engagement refer to user's full of attention with intrinsic interest, curiosity and deep focus (Agarwal and Karahanna, 2000).

In term of customer engagement, (Verhagen, *et al.*, 2015) extent the customer value measurement instead of looking at monetary value which purchase transaction, they go beyond the behavioral manifestations. Here, researchers used the uses and gratification theory (UGT) which differentiate four different benefits: cognitive benefits, social integrative benefits, personal integrative benefits, and hedonic benefits acquired from selection process of medium channel to suite own needs. Indeed, (Verhagen, *et al.*, 2015) include characteristics of virtual customer environments as motivating factors such as Access to knowledge, feedbacks, Social identification, and Social ties, Peer recognition, company recognition, Self-expression and altruism on their study. Some researchers had studied in the context of electronic government and found hypothesized E-government is positively associated with civic engagement (Stolz, Viermetz, and Skubacz, 2005).

Researchers (O'brien And Cairns, 2015); (O'brien, And Toms, 2013); (O'brien And Toms, 2010) did measured the same measures (perceived usability, aesthetics, focused attention, felt involvement, novelty, and endurability) as one framework called user engagement scale (UES) since 2008 (O'brien, And Toms,

2008). This UES framework been assessed into different online system such as electronic commerce, online searching system and latest online news website. Determining effectiveness of web content residing in the government website (Bucci *et al.*, 2015) also been proposed as a factor for citizen engagement such frequent podcasts providing updates on local initiatives and engagement opportunities, a public consultation calendar and map detailing all upcoming events in the area, and extensive educational materials for those looking to understand how local governance works and links to other social media platforms. Below in Table-1 is the summarization of user engagement measures from selected articles done previously in the context of various online systems.

Table-1. Measures to determine user engagement.

No.	Author & Year	Context	Measures & Outcomes
1.	Liikkanen, and Salovaara, 2015	Music on Youtube	Yotube video type (traditional, user appropriated, and derivative), genre popularity and engagement scale (view, comment, and vote counts).
2.	Khobzi & Teimourpour, 2015	online social networks	LCP segmentation (Like, Comment, Post).
3.	O'brien, H.L And Cairns, 2015	online news environments	differentiate between systems (in this case, online news sources) and experimental conditions (i.e., the type of media used to present online content).
4.	(Verhagen et al., 2015)	Virtual Customer Environments	Access to knowledge, feedbacks, Social identification, and Social ties, Peer recognition, company recognition, Self-expression and altruism. cognitive benefits, social integrative benefits, personal integrative benefits, and hedonic benefits.

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5.	Attfield, Kazai, Lalmas, 2011)	Online game	Focused Attention, Positive Affect, Aesthetics, Novelty, Endurability, Richness and Control, Reputation, trust and expectation and User Context.
6.	O'brien, H.L And Toms, E. G.2010	E-Commerce	Perceived Usability, Aesthetics, Focused Attention, Felt Involvement, Novelty, And Endurability.
7.	Kim, Kim and Wachter, 2013)	Mobile User Engagement (MoEN)	Engagement motivations, perceived value, satisfaction, and continued engagement intention.
8.	O'brien and Toms, 2013	exploratory search system	Perceived Usability (PUS), Aesthetics (AE), Novelty (NO), Felt Involvement (FI), Focused Attention (FA) and Endurability (EN)
9.	(Webster And Ho, 1997); (Jacques et al., 1995)	Educational Multimedia Systems.	Users' perceptions of Challenge, Attention, Feedback, Variety, Curiosity and Intrinsic Interest

b) Electronic government website and assessment method

Electronic government (e-government) website become as interface of the electronic government (Huang and Benyoucef, 2014) that served as a windows for users to communicate, make as single point access and engagement medium with government. In the earlier stage, United States model had plan the implementation of electronic government was creating a medium to i.) online information presentable, ii.) online service and form transaction, iii.) system integration upon schedule and iv.) then real-time responses (Layne and Lee, 2001). In term of web content assessment, (Bauer and Scharl, 2000) conceptualized content classification and evaluation into five categories which include (1) manual classification; (2) textual analysis; (3) statistical clustering;(4) non-supervised neural network; and (5) supervised neural

network. In manual classification, they used morphological chart to classifying environmental web sites based on six (6) observable attributes which contain strategy, organizational goal, and interactivity, wealth of information, appearance and organizational structure of environmental website versus either activist sites or government sites.

In regards, there was a study to determine which city had developed the informational world cities status as one of the electronic government initiatives and based on that development of informational world cities, Malaysia also far behind from Singapore which (Mainka *et al.*, 2013) indicated that Kuala Lumpur as Malaysia city center only provide 94 points of maturity level that comprising four stages of e government maturity level: i.) information ii.) communication iii.) transaction and iv.) participation. At this stage of e-government development, most of the studies were related in measuring participation of citizen towards government services.

Therefore, most electronic government studies look into the electronic participation (E-participation whereby E-Participation is about nurturing civic engagement and undisclosed anticipation of governance through Information and Communications Technologies (ICTs). UNPAN provide the e-Participation as a tool for engagement and strengthened collaboration between governments and citizens and aimed for access to information and public services as well as to promote participation in policy-making, both for the empowerment of individual citizens and the benefit of society as a whole. The study that done within a year of 2012 and early 2013 reported that Kuala Lumpur earned less than 20 points in term of communication and transaction which is very low as compared to other Asian country such Beijing, Melbourne and Shenzhen. The worst scored reported by (Mainka *et al.*, 2013) study was zero points for the participation. However, according to United Nations (UN) Department of Economic and Social Affairs UNPAN, Malaysia E-Government and E-participation indices keep increase from 2013 to 2014 as shown in Figure-1.
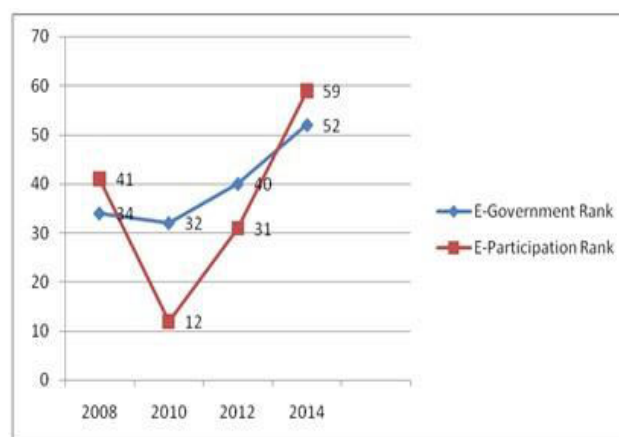
Figure-1. Malaysia e-government and e-participation index from 2008 to 2014.

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United Nation E-Government and E-participation indices are benchmarking and ranking tools that retrospectively measure the achievements of a class of entities, such as government agencies or countries, in the use of technology (Rorissa, Demissie and Pardo, 2011). One of the measures is E-Participation Index that used to assess the quality and usefulness of information and services provided by a country's government for the purpose of engaging its citizens in public policy issues. This index is indicative of both the capacity and the willingness of the country's government in encouraging the citizens in promoting deliberative and participatory decision-making and of the reach of its own socially inclusive governance program.

Malaysia government effort on maintaining sustainable and usable of electronic government website as part of ICT strategic plan and digitalization initiatives had improve from time to time the criteria of evaluating each Malaysia government website. Even the criteria been adopted from Nevada University website benchmark, the improvement has been made to suite Malaysia cultural and domestic needs such in content component that provide additional information from time to time.

Star Rating   Marks   Definition of portals and websites
1-Star   1-19   A static, working website with minimal information on the agency
2-Star   20-39   A basic dynamic portal/website with a vast array of information on the agency
3-Star   40-59   A dynamic portal/website which offers combination of information and limited online services
4-Star   60-79   An interactive portal/website with a two-way communication between government and citizen as well as providing convenience to its users
5-Star   80-100   An engaging portal/website with various options offered to citizen ranging from interaction, user-friendliness to a variety of online services

Below in Table-2 is the current evaluation criteria of Malaysia government website which implementing yearly assessment name as Malaysia Government Portals and Websites Assessment (MGPWA) which includes criteria such site performance, functionality, content, navigation, search, online transparency and look & feel. This assessment has been conducting by the agency Multimedia Development Corporations (MDeC) since 2005.

Starting on 1st July, 2014, Multimedia Development Corporation (MDeC) had launch of self assessment system which called Provider-Based Evaluation (ProBE) 2015 and aligned to the American Customer Satisfaction Index (ACSI). This evaluation retains the existing criteria and sub-criteria except include downtime measure in performance criteria. All the criteria and sub-criteria within the seven pillars (known as measures in research) been classified as mandatory tag or non-mandatory tag.

Table-2. Malaysia government portals and websites assessment (MGPWA) criteria by MDeC.

Criteria	Sub-criteria
Site Performance	Loading time, Downtime
Functionality	Aid, Tools & Help Resources Frequently Asked Questions (FAQ) Feedback Form Feedback Auto-Notification Number of Online Services Broadcast Electronic Archive Mobile Web/Version W3C Disability Accessibility Notification of Transaction New Media
Content	About Us Audio/Video Contact Details Multi Language Publications Updating Activities
Navigation	Homepage Length No Broken Link Personalisation Sitemap Link to myGov
Search	Search Within Website Searchable Database
Online transparency	Client's Charter Achievement of Client's Charter Statistic of Online Services Feedback Response Online Services Security
Look and feel	look and feel

The mark been given for each seven criteria's and sub criteria's assessment and the accumulated points will be ranked each website according to star rating from one (1) to five (5) and each star rating is defined as in Table-3. This star rating also will ranked the website according to classification of Ministry, State, University, Local authority and managed portal services (MPS).

Table-3. Malaysia government portals and websites assessment (MGPWA) star rating scale by MDeC.

Star Rating	Marks	Definition of portals and websites
1-Star	1-19	A static, working website with minimal information on the agency
2-Star	20-39	A basic dynamic portal/website with a vast array of information on the agency
3-Star	40-59	A dynamic portal/website which offers combination of information and limited online services
4-Star	60-79	An interactive portal/website with a two-way communication between government and citizen as well as providing convenience to its users
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Currently, Malaysia electronic government had ranked in a medium upper level country by UN and index of electronic government and electronic participation shown an increment from 2012 to 2014. Though, suppose government website that had reach certain level of maturity not just been use as information or content provider, but providing numerous opportunity towards citizen engagement, participation (Navarro, Pachón, & Cegarraa, 2012). This gateway should align with advancement of technology of the Internet of thing and at the same time meet the user's needs. Thus multidimensional approach assessment should be taking into consideration.

c) Website credibility

Credibility been defined as "users trust towards the informational content on a website" (Robin and Holmes, 2008). After all, the term credibility was initially derived from Fogg's works since 1999 that translate credibility as believability and a perceived quality. 'A credible webpage is one whose information can be accepted as the truth without the need to look elsewhere' (Schwarz & Morris, 2011). Other detailed explanation, credibility is judgments by individual that concern on believing the communication devices, in which evaluating website credibility for example should involves judgments concerning to the believability of the language, visuals, technical aspects (usability and interactivity) of the website's message or content, as well the source (Johnson and Martin, 2014).

Assessing website credibility studies had been explored and done by several researchers in several disciplines such health science, mass communication or news area, hotel and tourism, electronic government (Huang and Benyoucef, 2014). Two common approach always been adopted by city council in organizing their website content were information oriented approach which applies the concept of "one-stop shopping service" and the second is the user oriented which design based on categorizing information and services on the web according to the needs of different user groups (Torres, Pina and Aceretem, 2005) and this second approach been utilize by the most Malaysia municipal website currently.

One of the credibility website study done in the context of Malaysia was done by (Sidi and Junaidi, 2007) who claimed supposedly People should easily visit the e-government website to access the credible information and through five Malaysia's state website been reviewed based on (Fogg et al., 2003) credibility guides, they claimed sites appearance was important measure for credibility. Other study had manually accessing and evaluating eighty four European municipal website using an original Web Assessment Index that focus on accessibility, speed, navigability and content (Navarro, Pachón, & Cegarraa, 2012), (Miranda, Sanguino and Bañegil, 2009) and them included specific content should provide in municipal website. In other aspect, business model of information content organization reviewed by (Savoy and Salvendy, 2008) found that the most important variables in

government websites are currency, timeliness, update and accuracy and they concluded that information hierarchy with integrated content elements ensuring credibility.

There were various credibility measures been introduced by researchers either on the content, design or website performance itself as seen Table-4 below:

Table-4. Credibility measures.

No.	Authors	Measures
1.	Fogg et al., 2001	➢ Real-World Feel ➢ Ease of Use ➢ Expertise ➢ Trustworthiness ➢ Tailoring ➢ Commercial Implications ➢ Amateurism
2.	Metzger, 2007	➢ Construct ➢ Truthfulness ➢ Believability ➢ Trustworthiness ➢ Objectivity ➢ Reliability ➢ Heuristic ➢ Media-related ➢ Source-related ➢ Endorsement based ➢ Aesthetics-based ➢ Interaction ➢ Content cues ➢ Peripheral source Cues ➢ Peripheral information Object cues
3.	Robins and Holmes, 2008	High aesthetic treatment (HAT). Low aesthetic treatment (LAT)
4.	Lowry Wilson & Haig, 2014	Disposition to trust, Disposition to distrust, Trusting beliefs, Distrusting beliefs, Trusting intentions, Source credibility
5.	Horrall and Cavanagh, 2014	Credibility commercial information relevance judgment
6.	Huang, Brook and Chen, 2009	Nielsen usability guidelines Foggs Credibility guidelines
7.	Thom, Jessica, 2014	Credibility understanding and credibility judgment of contemporary news.

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8.	Luo, Luo, Schatzberg & Sia, 2013	Recommendation Source credibility, informational factors, recommendation persuasive, recommendation completeness recommendation adoption
9.	Olteanu, Peshterliev, Liu and Aberer, 2013	textual content, webpage design, link structure, social popularity
10.	Youngblood and Mackiewicz, 2012	City population, city per capita income and city measure 1: dichotomous web usability standard: web design errors, standard web design conventions, Site easier to use, Web presence. measure 2: a web-based test for accessibility. Measure 3, best HTML-markup practices.
11.	Vrana & Zafiropoulos, 2011	Unique Selling Propositions (USPs), efficient websites' structure and design: ➢ business function, ➢ corporation credibility ➢ contents reliability ➢ website Attractiveness ➢ systematic structure ➢ navigation.
12.	Metzger, Flanagin and medders, 2010	information and source credibility
13.	Dinesh Katre and Mayankana Gupta, 2011	79 parameters grouped under 7 broad categories such as accessibility, navigation, visual design, information content, interactivity, ownership and branding.
14.	Walter, Zhipping, 2007	usability, information quality, web credibility, and emotional satisfaction, web stickiness

Well said credibility is to extend of seeking for information quality (Rieh & Danielson, 2007). Example of such government website content should be accurate and reliable information about government itself, however maybe the content layout is a mess, or too lengthy of textual information (Flanagin and Metzger, 2007) or unclear of image content that could be as factors it become less credible. Such credibility factor discussed above could be also a denominating of user engagement due to information driven website user's objective always for seeking the information through it.

RESEARCH METHODOLOGY
This study used the method called as investigative and self evaluative method (fogg *et al.*,

2003), Jayasundari and Jeyshankar, 2014) and Khatri & Baheti, 2013). Below as in Table-5 show overall method applied in this study which included a literature review and data collection from automatic metric tool name Alexa.com for evaluation ten (10) existing municipal website. Alexa.com is automated metric tool that collecting network traffic data directly from ISP servers (Khoo *et al*., 2008). This Alexa.com automated metric tool also known as popular for website popularity rating (Sullivan and Matson, 2000), (Panda, Swain and Mall, 2015) that can minimize biases and provide quick preview of popular or unpopular website. Alexa.com automated metric tool also widely been used in the multi measures data collection of web assessment such (Melinda and Obra, 2013) utilized Alexa.com ranking data together with interviews, web content analysis, and the number of followers in social media data in order to formulate online strategies in the context of museums.
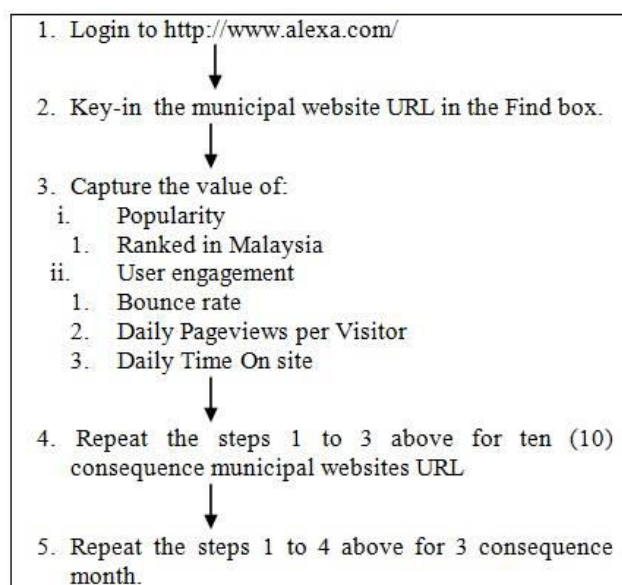
Then, (Wang, Li and Zhang, 2011) had utilize most of the measures from metric tools and one measure is from Alexa.com engagement measures to construct Page Interest (Page View, Bounce Rate and Time) which this Page interest acted as one of the dependent variable in the study that aimed to look at the impact by structure optimization (error 404, layer number, page size), keywords optimization (keyword density), content optimization (Title length), and link optimization (overall link). Other study used Alexa.com ranked as off-page credibility feature in subcategory of award to show general popularity on web page visualization compared to search result visualization (Schwarz and Morris, 2011).

In term of number of websites been measure simultaneously through website online metric tools, none of literature mentioned they were followed any specific procedure of minimum and maximum number of website for evaluation. It can be said that number of websites been evaluated using online metric tool such alexa.com is depend on the objective of study; the data collected usage and owned judgment on the number of website preferred. (Dominic, 2011) evaluated five 5 airlines website according to website performance metric tools name Pingdom and Skytrax company that considered those five website became a leaders in the area of IT implementations and perhaps the best practice of web design can be adapted. One study (Melinda and Obra, 2013) reviewed and collected data from 40 museums which those are most physically visited museums in the world. Another recent study by (Panda, Swain and Mall, 2015) utilize Alexa.com to get ten (10) highest-ranking commerce websites and combined with the data of user testing for designing appropriate and important usability features for commerce website. In larger scope of study, Butkiew collection 2000 website in various categories of website specified in Alexa.com and triangulate with other data in different metric tools to get understanding of website complexity.

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Table-5. Steps, tools and objective of the study.

Steps and tools used	Objective
➢ A literature review of state-of-the-art websites assessment	identify website evaluation measures related to website credibility and website user engagement
➢ Self Evaluation of ten municipal website using web metric tool i. Website profiler name Builtwith http://builtwith.com	To explore current practice and background of web content management applied as backend of the municipals website
ii.web analytic metric tool (Alexa.com)	To estimate website popularity ranking and user engagement level.

Using alexa.com automatic popularity metric, four (4) measures' values had been capture from Google Chrome internet browser. The study was used this procedure as follow in Table-6:

Table-6. Website evaluation using Alexa.com online metric tools procedure.

```
1. Login to http://www.alexa.com/
        ↓
2. Key-in the municipal website URL in the Find box.
        ↓
3. Capture the value of:
   i.    Popularity
      1.   Ranked in Malaysia
   ii.   User engagement
      1.   Bounce rate
      2.   Daily Pageviews per Visitor
      3.   Daily Time On site
        ↓
4. Repeat the steps 1 to 3 above for ten (10)
   consequence municipal websites URL
        ↓
5. Repeat the steps 1 to 4 above for 3 consequence
   month.
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FINDINGS AND DISCUSSIONS

The findings here are just initial or overview investigation of current situation of ten (10) municipal websites within Klang valley, Malaysia in term of website popularity (part of credibility measure) and website engagement. Through the result below, it's proven that further study should be taken into consideration to know what the credibility factors in influencing website user engagement.

a) Malaysia municipal website evaluation and its popularity ranking

On the perspective of website popularity, most of Malaysia government ranked far away behind at hundred ranked of thousand ranked either in Malaysia or even out of world ranked list. Below in Table-7 is the Malaysia municipal list and URL for ten (10) municipal government websites within Klang valley area.

Table-7. Government municipal website url within Klang Valley area of Malaysia.

No.	Malaysia Municipal Website URL
1.	http://www.mbpj.gov.my/
2.	http://www.mpkj.gov.my/
3.	https://ocps.mpsj.gov.my/cms/index.jsp
4.	http://www.mps.gov.my/web/guest/home
5.	http://www.mbsa.gov.my/ms-my/Halaman/homepage.aspx
6.	http://www.mpaj.gov.my/mpaj
7.	http://www.ppj.gov.my/
8.	http://www.mpsepang.gov.my/home
9.	http://www.mpklang.gov.my/home2
10.	http://www.dbkl.gov.my/index.php?lang=ms

Selection of this ten (10) website is based on objective of major research which to know current situation of website popularity and engagement. The list of Malaysia municipal website got from http://www.mycen.com.my/malaysia/ministry.html 6th April 2015 and its accessibility availability been checked before proceed with evaluation online. Below as in Table-8 is the ten (10) municipal Malaysia website popularity ranking based on Alexa.com metric tool within the three consequences month of Jun 2015 to August 2015.

Table-8. Government municipal website Malaysia popularity ranking (alexa.com metric Tool).

Malaysia Municipal Website URL	Ranked in Malaysia		
	15-Jun	29-Jul	29-Aug
1.	2,690	4,149	3,441
2.	13,228	Nil	9,874
3.	5,824	6,005	5,621
4.	4,297	7,911	Nil
5.	4773	12673	4464
6.	10334	Nil	6561
7.	4211	10181	6663
8.	3,001	4,233	8,578
9.	2,166	4,109	8,383
10.	1,362	987	1,151

It's showed that municipal website not as popular as other commercial website or entertainment website or even search engine site such Google that always ranked at first ranking in the top ten listing. Herewith, less popularity of Malaysia municipal websites give a signed that further investigation need to be done to determine why government website become less prominence.

The popularity of website solely may could not be a good justification of credible website especially for information driven website such government website. However, when the information source is not a primer, it's become less credible (Schwarz & Morris, 2011) and (Metzger, Flanagin and Meeders, 2010), instead (Salman, Ali *et al*., 2014) also prove that information in the website only become third highest usage of Internet as communication used among urban Malaysian society for information search. In relating to website credibility study, (Schwarz and Morris, 2011) found that visualization made a significant impact on participants' ability to evaluate credibility. Another study, (Wang, Li and Zhang, 2011) study resulted that Page Size has significant positive effect on Page interest and Search Engine Optimization (SEO). (Robins, Holmes & Stansbury, 2010) also used Alexa.com ranking result as part of measures in identified the relationship between visual design and credibility and found that even traffic ranking by Alexa.com was

somehow misleading, though it value still showing some finding on the real time of website situation.

b) Municipal electronic government website user engagement

Based on the estimation of engagement statistic based on Alexa.com metric tool showed in Table-9 that the percentage of bounce rate are somehow higher, also estimate of engagement statistic which highlighted based on bounce rate, pageview per visitor (Estimated daily unique pageviews per visitor on the site) and daily time on site (Estimated daily time (minute and second) on site (mm:ss) per visitor to the site) within three month starting from Jun to August 2015. It's been said that the less the bounce rate means the more the return visit rate (Plaza, 2011). The minimum and maximum mean value of bounce rate was between 9.87% and 33.77% which also show quite huge ratio and the lower the bounce rate suppose should be good reflecting user really into to the website. In term of Daily Pageviews per Visitor minimum mean value was 2.40% whereas maximum mean value was 19.23%. The major different on maximum mean value on Daily Pageviews per Visitor was belong to Klang municipal website. Daily Time on Site was rating based on minute and second and minimum mean value was 24 second and maximum mean value was 6 minute and one second.

Table-9. Engagement statistic for ten municipal website which highlighted based on bounce rate, pageview per visitor and daily time on site.

Malaysia Municipal Website URL	Bounce Rate (Percentage of visits to the site that consist of a single pageview.)				Daily Pageviews per Visitor (Estimated daily unique pageviews per visitor on the site.)				Daily Time on Site (Estimated daily time on site (mm:ss) per visitor to the site.)			
	15-Jun 2015	29-Jul 2015	29-Aug 2015	Avg	15-Jun 2015	29-Jul 2015	29-Aug 2015	Avg	15-Jun 2015	29-Jul 2015	29-Aug 2015	Avg
http://www.mbpj.gov.my/	27.60%	34.70%	22.10%	28.13%	5.30%	4.70%	5.00%	5.00%	7:35	4:38	5:52	6:01
http://www.mpkj.gov.my/	17.60%	18.80%	11.10%	15.83%	3.70%	2.40%	6.00%	4.03%	4:39	3:34	5:41	4:38
https://ocps.mpsj.gov.my/cms/index.jsp	13.30%	5.30%	9.40%	9.33%	3.60%	4.30%	4.00%	3.97%	3:41	5:29	5:59	5:03
http://www.mps.gov.my/web/guest/home	35.70%	39.50%	39.10%	38.10%	3.80%	3.60%	2.60%	3.33%	3:35	3:08	2:27	3:03
http://www.mbsa.gov.my/ms-my/Halaman/homepage.aspx	37.80%	30.20%	32.60%	33.53%	3.20%	3.10%	2.20%	2.83%	2:22	3:28	3:08	2:59
http://www.mpaj.gov.my/mpaj	33.30%	36.00%	32.00%	33.77%	3.30%	2.60%	2.80%	2.90%	5:35	5:11	5:10	5:18
http://www.ppj.gov.my/	10.60%	7.90%	11.10%	9.87%	2.30%	2.50%	2.40%	2.40%	3:53	3:55	3:49	3:52
http://www.mpsepang.gov.my/home	13.50%	16.90%	23.50%	17.97%	15.00%	13.00%	10.00%	12.67%	23:31	20:08	16:10	19:56
http://www.mpklang.gov.my/home2	7.20%	20.50%	25.00%	17.57%	40.00%	14.00%	3.70%	19.23%	45:21:00	18:56	8:55	0:24
http://www.dbkl.gov.my/index.php?lang=ms	23.90%	26.00%	25.90%	25.27%	3.20%	3.40%	3.60%	3.40%	:31	3:55	4:06	4:00

The engagement measure supposed to show good result with less bounce rate which not many user that only visit the first page and then left from the website. Then positive aspect of engagement also should show users view as many page per day and longer time in each pages.

CONCLUSIONS

In conclusion, this paper highlights several measures essential for determining website credibility factors and website user engagement and some of it was overlap such aesthetic measure. In term of assessment method, instead of having well determined assessment system that administered by the owner of the website, researcher and scholar outside of its organization also can complement the multi measures assessment using real time and faster approach offered by online automated tool. Findings from the online metric tool such Alexa.com shown Malaysia municipal website need to fine strategies on how to improve user engagement and make their website prominent source of government information. Even, the finding is based on estimation from huge data online, low popularity ranking at least give a sign that improvement need to be done for this primer online information source become preferable. Factors in determining user engagement also need to be crucially conceptualize for future study or assessment. This study also can be more impactful if include other measures such as website performance or website effectiveness, so that holistic picture of current municipal website can be overview. Further study can be done either including numbers of website on the same theme, longer time of assessment for limited number of websites in order to get more reliable pattern of findings.

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