

IMPACT OF WEBSITE CREDIBILITY FACTORS ON USER ENGAGEMENT IN  
MALAYSIAN MUNICIPAL WEBSITES

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**DEDICATION**

*My Big family*

*My imam*

*My lovely daughters and son*

*My parents and parents-in-law*

*My friends around me*

*Thank you for your prayers and understanding*

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## ABSTRACT

Overwhelming information source in the online environment has made the role of a government website as the main government information provider to become less prominent. Besides that, issues such as usability problem, low popularity ranking and less user engagement on government's website have contributed to its less user engagement. Thus, the aim of this research is to investigate the credibility factors for information-driven websites, such as municipal government websites, in influencing website user engagement. The proposed framework of website credibility factors in influencing user engagement derived as previous studies on assessment of the whole aspect of website credibility remain scarce. Besides that, studies that identify the relationship between website credibility factors and user engagement are also limited. This study firstly began with a preliminary assessment to reveal low utilization of Malaysian municipal government website. The assessment involved the capture of the current website ranking and website user engagement of ten municipal websites within the Klang Valley, Malaysia. The second preliminary study used website content analysis to confirm the existence of website elements and design features on the current websites that act as credibility cues. All verified content elements and design features were encapsulated as part of the scale items in appropriate variables of a survey instrument. The study employed quantitative approach by using survey questionnaire as the instrument which was adapted from previous research. The survey questionnaire was distributed among website users of ten municipal websites within the Klang Valley aged eighteen years and above, using both online and printed questionnaires. Descriptive data analysis and structural equation modelling technique were used to answer the research objectives. The results of this study proved that website credibility factors of surface credibility, content credibility, and reputed credibility have positive relationship on user engagement, except for source credibility that shows vice versa result. Within website credibility factor itself, surface credibility has also positive relationship on source credibility, content credibility and reputed credibility factors. The conceptual framework is found appropriate for information-driven websites and serves as a value-aided guideline for web content management practices. This study benefits the web content management practitioners and web developers in identifying which website content elements and design features that can act as credibility cues in information-driven website that will have influence over user engagement.

## ABSTRAK

Kebanjiran sumber maklumat atas talian secara meluas telah menjadikan peranan laman sesawang kerajaan sebagai sumber utama maklumat kerajaan kurang menonjol. Selain itu, isu-isu seperti masalah akses, tahap populariti yang rendah dalam kalangan pengguna dan kurangnya penglibatan pengguna juga turut dilaporkan. Oleh itu, tujuan kajian ini dilakukan ialah untuk mengkaji faktor-faktor kredibiliti laman sesawang berasaskan maklumat seperti laman sesawang majlis perbandaran dalam mempengaruhi penglibatan pengguna. Kerangka kerja bagi kebolehpercayaan laman sesawang dalam mempengaruhi penglibatan pengguna diperoleh kerana kajian literatur yang lepas telah menunjukkan kekurangan dalam penilaian aspek kredibiliti laman sesawang secara menyeluruh. Selain dari itu, penyelidikan yang membuktikan hubungan antara faktor kredibiliti laman sesawang dengan penglibatan pengguna juga adalah terhad. Penilaian awal yang dilakukan mengesahkan penggunaan laman sesawang majlis perbandaran di Malaysia adalah rendah. Penilaian tersebut merangkumi kedudukan populariti semasa di Malaysia dan penglibatan pengguna di sepuluh laman sesawang majlis perbandaran di Lembah Klang Malaysia. Penilaian awal yang kedua dilakukan untuk mengenalpasti kandungan laman sesawang dan ciri-cirinya yang bertindak sebagai penanda aras kredibiliti. Pengesanan unsur-unsur kandungan dan ciri-ciri reka bentuk yang bertindak sebagai penanda aras ini dijadikan sebahagian daripada skala pembolehubah dan disesuaikan sebagai instrumen soal selidik kajian. Kajian ini menggunakan pendekatan kuantitatif dalam pembangunan instrumen soal selidik yang diadaptasi daripada kajian terdahulu. Borang soal selidik telah diedarkan secara atas talian serta borang bercetak dalam kalangan para pengguna untuk sepuluh laman sesawang majlis perbandaran di sekitar Lembah Klang yang berumur lapan belas tahun dan ke atas. Analisa data deskriptif dan teknik permodelan persamaan berstruktur digunakan untuk menjawab objektif kajian. Dapatan kajian ini membuktikan bahawa faktor kredibiliti laman sesawang seperti kredibiliti awalan, kredibiliti kandungan dan kredibiliti reputasi mempunyai hubungan positif dengan keterlibatan pengguna, kecuali kredibiliti sumber menunjukkan dapatan kajian yang sebaliknya. Model kajian sesuai untuk laman sesawang berasaskan maklumat dan bertindak sebagai garis panduan tambahan bagi praktis pengurusan kandungan web. Kajian ini juga bermanfaat kepada pihak pengurusan laman sesawang dan kumpulan pembangunan laman sesawang dalam mengenalpasti unsur kandungan dan ciri reka bentuk laman sesawang yang bertindak sebagai bukti kebolehpercayaan laman sesawang yang mempengaruhi pengguna untuk mendapatkan maklumat.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<b>DECLARATION</b>	ii
	<b>DEDICATION</b>	Error
	! Bookmark not defined.	
	<b>ACKNOWLEDGEMENT</b>	iv
	<b>ABSTRACT</b>	v
	<b>ABSTRAK</b>	vi
	<b>TABLE OF CONTENTS</b>	viii
	<b>LIST OF TABLES</b>	xiii
	<b>LIST OF FIGURES</b>	xvii
	<b>LIST OF ABBREVIATIONS</b>	xx
	<b>LIST OF APPENDICES</b>	xxi
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 Overview	1
	1.2 Research Background	2
	1.3 Problem Statement	9
	1.4 Research Questions	10
	1.5 Research Objectives	11
	1.6 Research Scope	11
	1.7 Significance of the Study	12
	1.8 Organization of the Thesis	14
<b>2</b>	<b>LITERATURE REVIEW</b>	<b>16</b>
	2.1 Introduction	16
	2.2 Website Evolution and Development	17

2.3	Web Content Management Practices	18
2.4	Website Contents and Evaluations	24
2.5	Electronic Government Websites	28
2.6	Malaysian Electronic Government Assessments and Evaluations	31
2.7	Municipal Government Website Contents	38
2.8	Website User Engagement	41
2.9	Review of Previous Frameworks and Models on User Engagement Studies	44
2.10	Website Credibility	57
2.11	Review of Previous Framework and Models on Credibility Studies	64
2.12	Conclusion	71
<b>3</b>	<b>THE THEORETICAL FRAMEWORK AND HYPOTHESES</b>	<b>73</b>
3.1	Introduction	73
3.2	Underlying Theories	74
	3.2.1 Flow Theory	74
	3.2.2 Source Credibility Theory (SCT)	76
	3.2.3 Elaboration Likelihood Model of Persuasiveness	77
3.3	The Conceptual Framework	79
3.4	Website User Engagement	81
3.5	Website Credibility	85
	3.5.1 Surface Credibility	87
	3.5.1.1 Aesthetics	89
	3.5.1.2 Usability	90
	3.5.1.3 Content Organization	91
	3.5.1.4 Interactivity	92
	3.5.1.5 Navigation	94
	3.5.2 Source Credibility	102
	3.5.3 Content Credibility	103
	3.5.4 Reputed Credibility	105
3.6	The Proposed Conceptual Framework	106

3.7	Summary	109
<b>4</b>	<b>RESEARCH METHODOLOGY</b>	<b>111</b>
4.1	Introduction	111
4.2	Research Approach	111
4.3	Research Design	113
4.4	Preliminary Study Method	116
4.5	Survey Questionnaire Development	121
4.5.1	Population and Sampling	122
4.5.2	Design and Writing the Questionnaire Instrument	127
4.5.2.1	Surface Credibility Dimension	130
4.5.2.2	Source Credibility Dimension	135
4.5.2.3	Content Credibility Dimension	136
4.5.2.4	Reputed Credibility Dimension	137
4.5.2.5	Involvement Sub-Dimension of User Engagement	138
4.5.2.6	Participation Sub-Dimension of User Engagement	139
4.6	Conceptual Validation	141
4.7	Pilot Testing	148
4.8	Data Collection	151
4.9	Survey Data Analysis	152
4.9.1	Consideration of Formative or Reflective Model	153
4.10	Summary	158
<b>5</b>	<b>PRELIMINARY STUDY RESULTS</b>	<b>160</b>
5.1	Introduction	160
5.2	Ten (10) Municipal Website Evaluation Using Online Tools	160
5.3	Malaysian Municipal Website Evaluation on its Web Technology Used	161
5.4	Malaysian Municipal Website Evaluation on its Popularity Ranking	162
5.5	Malaysian Municipal Website Evaluation on User	



	Engagement	164
5.6	Website Content Analysis Results	167
5.7	Summary	171
<b>6</b>	<b>DATA ANALYSIS AND RESULTS</b>	<b>172</b>
6.1	Introduction	172
6.2	Survey Response Analysis	172
6.2.1	Response Rate	173
6.3	Common Method Bias (Variance)	174
6.4	Demographic Profiles of the Respondents	175
6.5	Initial Measurement Model	177
6.6	Descriptive Analysis of the Research Variables	187
6.6.1	Involvement Construct of User Engagement	187
6.6.2	Participation Construct of User Engagement	188
6.6.3	Aesthetics Sub-Dimension of Surface Credibility Construct	189
6.6.4	Usability Sub-Dimension of Surface Credibility Construct	190
6.6.5	Navigation Sub-Dimension of Surface Credibility Construct	191
6.6.6	Content Organization Sub-Dimension of Surface Credibility Construct	192
6.6.7	Interactivity Sub-Dimension of Surface Credibility Construct	193
6.6.8	Source Credibility Construct of Website Credibility	194
6.6.9	Content Credibility	195
6.6.10	Reputed Credibility	196
6.7	Assessment of Formative Second Order Constructs	197
6.8	Structural Model (Hypothesis Testing)	205
6.8.1	Testing the Predictive Relevance of the Model	207
6.9	Summary	208
<b>7</b>	<b>DISCUSSIONS AND CONCLUSIONS</b>	<b>210</b>

7.1	Introduction	210
7.2	Discussion of Research Findings	210
7.2.1	The Impact of Website Content as Website Credibility Cues	212
7.2.2	The Significance Level of website credibility Factors and Relationship between Website Credibility Dimensions	216
7.2.3	Relationship between Website Credibility on User Engagement	219
7.3	Research Contributions	220
7.3.1	Theoretical Contribution	221
7.3.2	Methodological Contribution	222
7.3.3	Practical Contribution	223
7.4	Research Limitations	224
7.5	Recommendations for Future Works	226
7.6	Conclusion	227
7.7	Chapter Summary	229
	<b>REFERENCES</b>	<b>230</b>
	Appendices A-H	263-297

## LIST OF TABLES

<b>TABLE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
1.1	Percentage of Malaysian Internet users in using government services	5
1.2	Malaysia Internet user's distribution based on region in Malaysia 2016 and 2017	12
2.1	Website content evaluation conducted on different types of websites	28
2.2	Electronic government website measures	30
2.3	Star rating scale for Malaysian Government Portals and Websites Assessment (MGPWA)	31
2.4	Previous studies on Malaysian government website assessments	36
2.5	Previous studies on Malaysian government website assessments (Cont.)	37
2.6	Website content evaluation typologies resides in selected municipal website	39
2.7	State of different engagement levels by O'brien and Toms (2008)	42
2.8	User engagement measures and definitions	43
2.9	Obrien and Toms (2008) Attributes of flow, aesthetic, play, and information interaction theories, and proposed relevance to engagement	47
2.10	Credibility guidelines and explanations	58
2.11	Previous studies on credibility assessments	61
3.1	Three-source credibility scale	76
3.2	Participation levels	83

3.3	Citizen Participation Scale	84
3.4	Website content elements and design features as surface credibility dimensions	96
3.5	Operational definitions of variables	108
4.1	Steps, tools and objectives of the preliminary studies	117
4.2	Website popularity and user engagement evaluation using <i>Alexa.com</i> online metric tool procedure	118
4.3	Number of residents in Klang Valley, Malaysia according to Local Authorities Area 2010-2020	123
4.4	Details on part a of the questionnaire (Demographic information)	128
4.5	Items for surface credibility sub-dimensions	131
4.6	Items for source credibility dimension	136
4.7	Items for content credibility dimension	137
4.8	Items for reputed credibility dimension	138
4.9	Items for involvement- user engagement's dimension	139
4.10	Items for participation- user engagement's dimension	140
4.11	Summary of instrument development	141
4.12	Four-point Likert Scale used in the content validity form	143
4.13	Content validity index analysis for relevancy	144
4.14	Face validity questions in the content validity form	148
4.15	Result of reliability analysis during pilot study	149
4.16	Reflective and formative measurement in SEM	153
4.17	PLS-SEM Assessment summaries	155
5.1	Web technology profile for ten (10) Municipal websites in the Klang Valley, Malaysia	162
5.2	Ranking of government municipal websites based on Malaysia popularity ranking ( <i>Alexa.com</i> metric tool)	163
5.3	Engagement statistics for ten municipal websites highlighted based on bounce rate, pageviews per visitors and daily time on site	166
5.4	Identification of homepage website content elements and features	168
6.1	Response rates of the respondents	174

6.2	Assessing common method bias through total variance explained	174
6.3	Demographic profiles of respondents	175
6.4	Internal consistency and convergent validity indices	180
6.5	Discriminant validity using Fornell and Larcker (1981)	183
6.6	Assessing discriminant validity via cross-loading value	184
6.7	Discriminant validity assessments by HTMT value results	185
6.8	Descriptive statistics of the measurement for involvement sub-dimension of user engagement	188
6.9	Descriptive statistics of the indicators for participation sub-dimension of user engagement	189
6.10	Descriptive statistics of the indicators for aesthetics sub-dimension of surface credibility	190
6.11	Descriptive statistics of the indicators for usability sub-dimension of surface credibility	190
6.12	Descriptive statistics of the indicators for navigation sub-dimension of surface credibility	191
6.13	Descriptive statistics of the indicators for interface design sub-dimension of surface credibility	192
6.14	Descriptive statistics of the indicators for interactivity sub-dimension of surface credibility's indicators	193
6.15	Descriptive statistics for source credibility indicators	194
6.16	Descriptive statistics for content credibility indicators	195
6.17	Descriptive statistics for reputed credibility indicators	196
6.18	Outer VIF value for each indicator of formative construct	199
6.19	Assessing tolerance value for formative indicators	200
6.20	Assessing significance of formative indicators	201
6.21	Collinearity assessment of formative constructs	203
6.22	Outer weight and loading results of bootstrapping procedure	203
6.23	Collinearity assessment using VIF value	205
6.24	Path coefficient values for assessing structural model	206
6.25	Predictive relevance and effect size	208

7.1	Web content and characteristic based on formative items weight's significance	213
7.2	Hypotheses result	219

## LIST OF FIGURES

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
1.1	Web evolutionary framework	3
1.2	Percentage of Malaysian Internet users by online activities	4
1.3	Percentage of Malaysia Internet users that visited and did not visited government official websites	6
1.4	Malaysia E-Government and E-participation index	8
2.1	The content management system processes	19
2.2	A model of an efficient hotel website	20
2.3	The web development activities which separates each task with a different model as phase outcomes	21
2.4	Key considerations on development of user experiences on the web	22
2.5	Evolutions of website design patterns	23
2.6	Content evaluation frameworks	25
2.7	A hypothesized model separating between website content and websites design	26
2.8	Malaysia Government Portals and Websites Assessment (MGPWA) (MDeC)	33
2.9	Star rating result of MGPWA for the year of 2005 to 2012	34
2.10	(a) Prior behavioral theory of information system success, (b) Improved version behavioral and attitudinal theory by Kappelman and Mclean (1992)	44
2.11	Engagement measures in influencing user performance and future intention to use	45
2.12	Path model of UES factors in e-shopping domain by O'brien and Toms (2013)	46

2.13	Model of user engagement in online interventions by Short et al. (2015)	48
2.14	Prominence and interpretation theory by Fogg (2003)	34
2.15	Users' credibility judgment on online information model by Wathen and Burkell (2002)	66
2.16	Dual processing model of Website credibility assessment by Metzger (2007)	67
2.17	A unifying framework of credibility assessment by Hilligoss and Rieh (2008)	68
2.18	Trusting or distrusting the source of information model by Lowry, Wilson and Haig (2014)	34
2.19	Theoretical model of perceived credibility on the political Facebook page by Liu (2011)	70
3.1	Elaboration Likelihood Model (ELM)	78
3.2	Conceptual framework derivation	80
3.3	Model of identifying the level of site experiences that affect the relationship between usability elements and performance	93
3.4	The proposed conceptual framework of website credibility factors for website user engagement	106
4.1	Research onion of the study	112
4.2	Research process flow	115
4.3	Sample of the web content analysis instrument used in the 2 <sup>nd</sup> preliminary study	120
4.4	Estimation of sample size by <i>www.danielsoper.com</i> calculator	124
4.5	Calculation of minimum sample size using <i>G-Power</i> software	125
4.6	Specifying target respondents using the boost post <i>Facebook</i> service	126
4.7	Redundancy analysis result for surface credibility in pilot study	150
4.8	Redundancy analysis result for user engagement in pilot study	150



6.1	1 <sup>st</sup> Stage and 2 <sup>nd</sup> stage of formative–formative type	178
6.2	<i>SmartPLS</i> output for the first-stage measurement model	179
6.3	Cronbach's alpha value	181
6.4	Composite reliability value	182
6.5	Average variance extracted value	182
6.6	Analysis of assessing normality	186
6.7	Second stage of the two-stage formative measurement model	198
6.8	Redundancy analysis for surface credibility construct	199
6.9	Redundancy analysis for user engagement formative construct with global indicator	199
6.10	Structural model assessment result	206
6.11	Website credibility factors that influence user engagement framework based on SmartPLS analysis	209
7.1	Relationship of website credibility dimensions	217
7.2	The revised website credibility factors in influencing user engagement's framework	222

## LIST OF ABBREVIATIONS

CC	-	Content credibility
CVI	-	Content validity index
ELM	-	Elaborated Likelihood Model
EGDI	-	Electronic Government Development Index
HCI	-	Human computer interaction
IA	-	Information architecture
I-CVI	-	Item-level content validity index
KMO	-	Kaiser-Meyer-Olkin
PAF	-	Principal axis factoring
RC	-	Reputed credibility
SC	-	Surface credibility
S-CVI	-	Scale-level content validity index
SRCC	-	Source credibility
UE	-	User engagement
VIF	-	Variance inflator factor

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	A Notification Letter as Researcher (PhD Candidate) From Universiti Teknologi Malaysia	263
B	A Letter of Permission for Validity Process	264
C	Example of Content Validation Form Return by the Expert	265
D	Clarity Scale Analysis of SCVI for 57 Item Scale With 15 Expert Raters	275
E	A Sample Letter Of Permission for Data Collection in Ten (10) Malaysia Government Municipals	276
F	Questionnaire Instrument	277
G	<i>SmartPLS</i> Result of Analysis	289
H	List of Publications	297

## CHAPTER 1

### INTRODUCTION

#### 1.1 Overview

In this age, overwhelming of information sources available in the online sphere make the information on organizational websites such as government websites, less preferable. Assessing user engagement in government website is crucial as it has become part of a government's strategic tool in delivering effective online information and services to numerous target users. Several evidences found either from the literature and the web's yearly assessment report mentioned that government website were underutilized and had low participation of citizen engagement. Participation in government website is defined as a connection of citizens and other target users engaging and assessing the information displayed and performing transactions with the assistance of web objects. The level of user involvement in the e-government process using various website objects or features was also described in measuring user participation (Fath-Allah *et al.*, 2014).

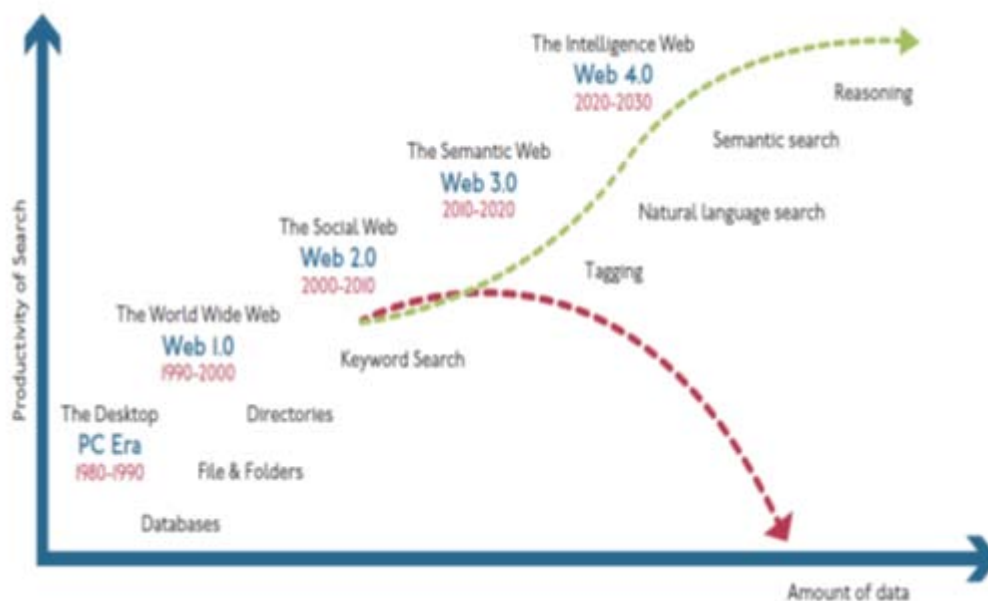
The antecedents in influencing user engagement has been explored but rarely for government websites specifically. Some studies relate user engagement with website performance, its system quality and website functionality separately. The issues of credibility had always been related with websites as few researchers claimed that once a user is able to accept information on a page as true at face value, then the page is considered credible; if one needs to go elsewhere to check the validity of information on the page, then it is thus less credible (Schwarz and Morris,

2011). The first judgement of a website has become the key factor when a user wants to start engaging with the website, and this is recognized as surface credibility. Credibility that relate with online information was defined by Bauer and Scharl (2000) as the overall judgments concerning the believability of the language, visuals, technical aspects (usability and interactivity) of the website's message or content, as well as believe on the website as the source of information. Indeed, Metzger, Flanagin and Meeders (2010) also stressed that evaluating the quality of information sources on website become more crucial. Overwhelming of factors arisen in relating to user behaviours on specific type of websites has brought about the idea of this research in identifying possible factors in influencing user engagement. In detail, the aims of the study is to explores the perceptions of the website users including their perceptions on website content elements and features, their judgement of the textual and visual information, their judgement of the websites as the main source of information and its reputation.

This chapter provides an indication of the study which covers background of the study (Section 1.2), problem statement (Section 1.3), and research objectives (Section 1.4), research questions (Section 1.5), research scope (Section 1.6), significance of the research (Section 1.7) and definition of terms (Section 1.8).

## **1.2 Research Background**

According to the Internet Users Survey (IUS), reported that within the year 2014 to 2016, there was marginal increase (3.3% to 2.2%) of the number of Internet users and penetration of 67% to 68% out of Malaysian total population (Statista, 2016). Another statistics from Malaysia Communications and Multimedia Commission (MCMC) quantified that more than 90% of the Malaysian web population spend one in every three minutes online (Ramachandran and The National ICT Association of Malaysia, 2014).



**Figure 1.1:** Web evolutionary framework

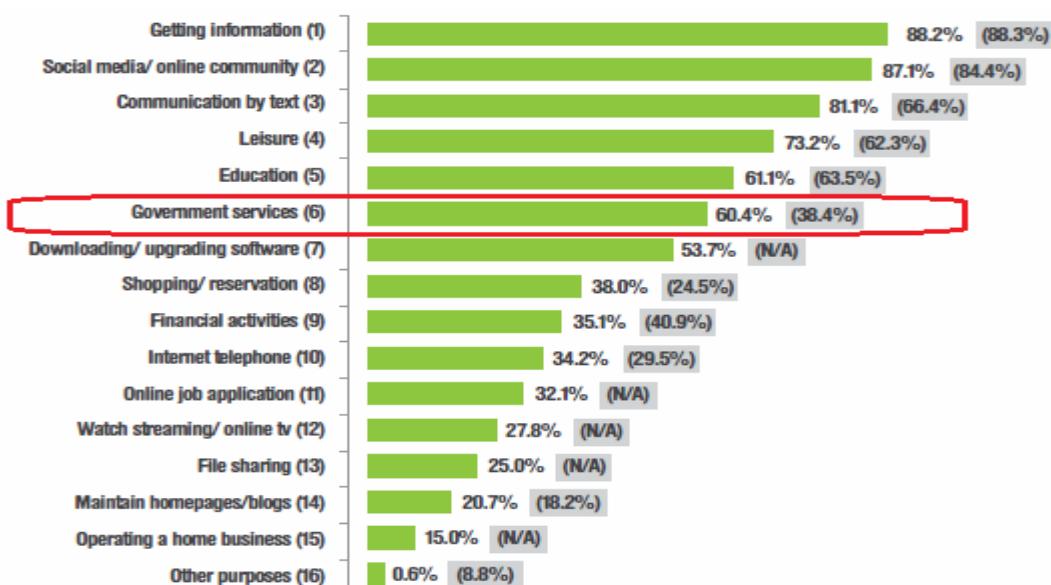
Source: PIKOM ICT Strategic Review (2014/15)

Indeed, the Internet allows us to disseminate and receive information faster and easier through several web contents. Figure 1.1 illustrates the trend of web evolution versus the nature of data, which is encapsulated in each phase of timeframe and keeps decreasing in terms of size, not the amount. On top of that, the growth of nature of data is also becoming increasingly meaningful information since the evolution of Web 2.0.

Websites serve an important role as a source of information in this digital age. As proven by Salman *et al.* (2014), information search has become the third highest usage of the Internet besides being a form of communication among the urban Malaysian society. In addition, Ling *et al.* (2011) also found that among youngsters in Malaysia, communication is shown to have the highest rate of intention for surfing while the second highest rated motive to stay online is information acquisition. However, this study also revealed that none of the government's website has been able to capture the interests of many youngsters. In addition, Hargittai *et al.* (2010) mentioned the importance of comparing how people perform online tasks with how they perceive their ability to find credible information. The prominent researcher in web evaluation, Nielsen (2008) found that web users do not usually

read pages the conventional way, line by line or serially. This caused other researchers (Sorum, Andersen and Clemmensen 2013; Jiang, Raghupathi, and Raghupathi, 2009) to point out the statement that high quality content and reliable information is vital to have high-quality websites for decision making. However, it is also limited literature discussions on the websites that provide public information.

One of the new frontiers in the era of semantic webs is the adoption of content management activities by connecting data, concepts, applications and people, as well as associated procedures and processes (Ramasamy, 2014). Malaysia as a developing country has continually established the ICT infrastructure due to the impact and power of ICT towards sustainability of the economy. Closely related to the aim of vision 2020 are two initiatives: 1.) The Government Transformation Programme (GTP) that aims for effective delivery of Government services, 2.) The Digital Transformation Program (DTP) which aims to accelerate the development of digital economy and improve the quality of life. Indeed, both initiatives are being projected to contribute more than RM200 million worth of investments. On top of that, it encourages further development of sustainable online content models and digital goods.



**Figure 1.2** : Percentage of Malaysian Internet users by online activities

Source: Malaysian Internet Users Survey (2014)

In a nutshell, the Prime Minister of Malaysia had targeted, that 90% of the government services will be online by 2015, through the GTP declaration (MAMPU, 2011). However, as in Figure 1.2, the MCMC's Malaysian Internet Users Survey, 2014 shows that the purpose of Malaysia Internet usage among Malaysian users for government services was only at 60.4%. Even 88% of the Malaysia Internet users access the Internet for getting information, but government website did not be their main preferences or choices of information source and this is essential when the legitimate and authorised online source of information had been neglectable. The Malaysian Internet Users Survey (2014) report also predicting that trust still a factor in government service utilization.

**Table 1.1 :** Percentage of Malaysian Internet users in using government services

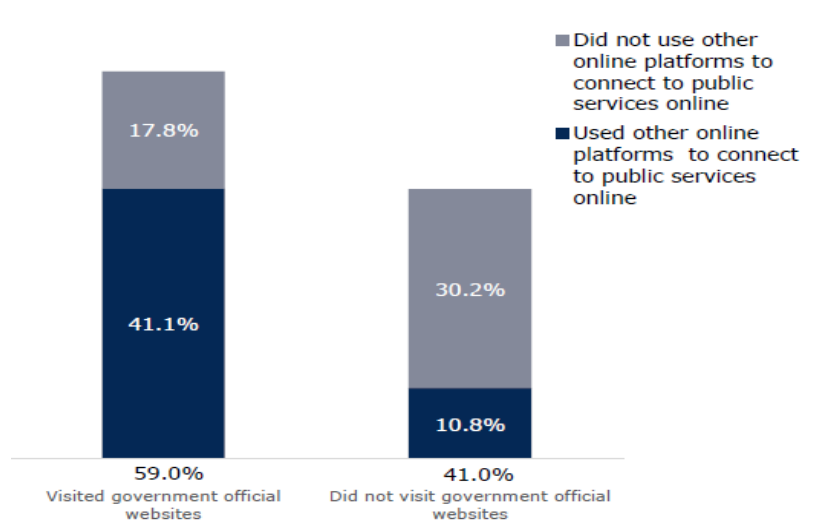
Year	Percentage	Source
2014	60.4	Internet Users Survey 2016 (MCMC)
2015	59.0	Internet Users Survey 2016 (MCMC)
2016	45.9	Internet Users Survey 2017 (MCMC)

Compilation of MCMC's Malaysian Internet Users Survey, 2014 to 2016 also highlighted the purpose of Internet uses among Malaysian Internet users for government services was decreased for every coming year at 60.4%, 59% and 45.9 in consequence year of 2014, 2015 and 2016. This result also can be an indicator that government websites are not the preferable provider of sources of information even the source of information from the reputable and authorize organization. This is also become a signal that Internet user make use to search information from the improper channel such as social network sites, unofficial site and blog that could be an agent in disseminating the fake and invalid information.

Figure 1.3 shows the percentage of Malaysia Internet user that visited and did not visited government official websites. In detail, the Malaysian Internet Users Survey (2016) reported that 59% of the Malaysian Internet user was lower value from 69% of the Malaysian Internet users that seek information from social media in which violated the role of government website as the valid and authorized source of online information. Malaysia government will allocate million Ringgit Malaysia



every year for the advancement of Malaysia electronic government since the establishment in 1996, and in return the use of electronic government component by Malaysia citizen such as government website also should to be at the peak of volume.



**Figure 1.3** : Percentage of Malaysia Internet users that visited and did not visited government official websites

Source: Malaysian Internet Users Survey (2016)

Some studies from another countries also showed that the local government websites do experience low frequency of use (Detlor *et al.*, 2013) which does not reflect more than half of the citizen of the country (Wang, 2014). The use of electronic government websites also reported low utilization, i.e. 45% in Australia and 41% in New Zealand (Gauld, Goldfinch and Horsburg, 2010) as their citizens preferred to deal with government transactions via telephone or face-to-face. In Mexico, Sandoval-Almazan and Gil-García (2012) discovered that low utilization of government websites was due to the slow progress towards citizen engagement and not as much of efforts were carried out to cultivate interaction, participation and collaboration on the websites. An online survey by Detlor *et al.* (2013) of individual user perception on the use of five municipal websites in the province of Ontario, Canada, indicated those websites were used infrequently as most users visited about once every two months to find information, and this study also highlighted that information quality was a major factor in influencing the usage. Even so, their

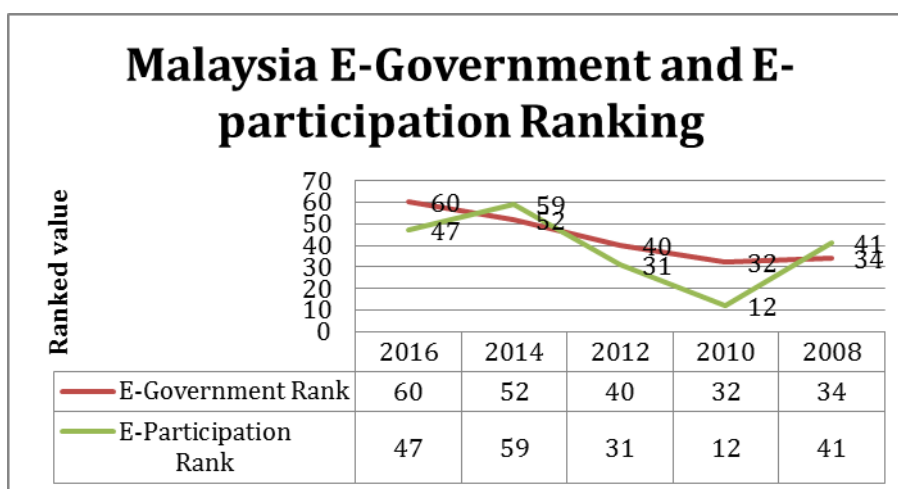
research was not able to obtain the result that relate between the effect on trust of providers and government website use (Detlor *et al.*, 2013).

Another study interviewed mostly employees from e-government departments in China (Wang, 2014) and respondent claimed that such specific government websites should provide distinctive information and services related to the life, work, or interests of its intended users. Wang (2014) then clarified that previous studies related to utilization or acceptance of e-government websites focused more on the functions and performances aspects of information systems. According to the United Nations E-Government Survey of 2014, some usage-facilitating features that can facilitate and improve the increment of government usage and engagement are features such as usability, usage monitoring and tracking, user feedback and usage promotion.

The United Nations Department of Economic and Social Affairs (UN DESA) performing UN E-Government Survey for the countries across the globe including Malaysia based on their electronic government performance. E-government 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 is used to assess the quality and usefulness of information and services provided by a country's government for engaging its citizens in public policy issues. This e-participation 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. E-participation is classified as the stage of involvement of the citizens in the e-government processes using various website objects or features such as comment forms, surveys, e-voting, and e-petitioning (Fath-Allah *et al.*, 2014).

Notably, the graph in Figure 1.4 showed an increase in the ranking for both e-government and e-participation in 2014 as compared to previous years of 2012, 2010 and 2008. In the 2016, even there was a positive decrement in Malaysia government

E-participation ranking, but comparing to other country such as Vietnam, Saudi Arabia and Mongolia have higher ranking of government E-participation. Despite the Malaysian government's efforts of providing and pushing all their resources to develop the country with technology advancement from year to year. This scenario can serve as a good indicator for researchers to further study on the factors contributing to user participation and engagement with electronic government resources.



**Figure 1.4 :** Malaysia E-Government and E-participation index

Source: Adapted data from UNPAN (2016)

The issue of usability and accessibility are continually occurring in almost every type of website, and the reason is hard to rectify because the evolution of the web has a bearing on previous implementations until today. Sullivan and Matson (2000) claimed this is possible because web designers may either neglect the criteria given by W3C or focus on other functionality in website development. Previous researchers had claimed the supposed accessibility barrier that occurred could be easily rectified by web designers in their accessibility case study of government websites, such as the Kuwait electronic government website (Kamoun and Almourad, 2014). Another previous study on the accessibility of nine (9) frequently used government websites in Malaysia using an online tool (Latif and Masrek, 2010) made a recommendation for webmasters to undergo training, be involved in user testing, and to follow the W3C guidelines. Each study on these two measures found at least one problem of usability and accessibility such as speed, broken links and

error page not found messages (Latif and Masrek, 2010; Isa *et al.*, 2011; Sullivan and Matson, 2000). This was also supported by Huang, Brooks, and Chen(2009), Dominic (2011), and Dominic *et al.* (2011) that broken links show bad impression for the credibility of a website. Concurrently, visitors assume that the website loses its credibility when it has errors and problems (Huang and Brooks, 2011).

### **1.3 Problem Statement**

The issue lack of user engagement in electronic government implementation had arisen since 1960's (Chan and Pan, 2008). Referring to the two sources of evidence previously mentioned in the research background (MCMC, 2014: UN DESA, 2014), citizen participation on e-government was shown to be still below the targeted percentage value (90%) and had decrement in terms of ranked value for three (3) consecutive years. A preliminary study on website user engagement using an online assessment tool (Bahry *et al.*, 2015) had also showed that most municipal websites in the Klang Valley, Malaysia, experienced more than 24% bounce rate, less than 5% of daily page views per visitor, and spent only 3-4 minutes on the websites. Factors influencing user engagement such as usability problem and website design are still the subject of debate among researchers (Huang and Benyoucef, 2014; Vicente and Novo, 2014). Karkin and Janssen (2014) highlighted that previous website evaluations focused more on technicality of the websites, such as content quality and performance, but with less focus on the primary goal of the website, like the delivery of public value as needed by website users that is supposedly the main objective of any government website.

Review of previous studies on user adoption of e-government website assessment tracked that the Technology Acceptance Model (TAM) was prominent and widely used (Rana, Dwivedi, and Williams, 2015) as the theoretical basis or underlying model which showed the focus was based on the acceptance or basic level of website usage on user perception (Burton-Jones and Straub, 2006). Most of previous website studies focused more on e-commerce or business-related websites

(Savoy and Salvendy 2008; Horrall and Cavanagh, 2014) as this type of websites was easier to measure based on transactions or monetary-oriented and scanty of previous research focus on evaluation of information driven-website (Stolz *et al.*, 2005).

Based on previous literature also, there is currently no framework that assessing the website credibility factors in influencing user engagement in specific to information-driven website such as government website. Prolific empirical studies on website credibility was done based on qualitative methods, like experimental heuristic evaluation (Huang and Benyoucef, 2014; Youngblood and Mackiewicz, 2012), expert usability evaluation (Johnson and Martin, 2014; Katre and Gupta, 2011), content analyses and interviews (Horrall and Cavanagh, 2014; Vrana and Zafirooulos, 2011). But these results were not provide empirical evidence that statistically show the relationship between website credibility factors in influencing user engagement and lacked the point of generalizing to a larger population or research model (Coleman *et al.*, 2008). More importantly, website evaluation frameworks should be developed according to purpose of website and special needs of users. Therefore, this study has responded to the scarcity of information systems research that appropriately contextualizes overall website credibility components, which includes: website content elements and design features (surface credibility), content credibility, reputation credibility and source credibility as factors in influencing website user engagement.

#### **1.4 Research Questions**

The main objective of this study is to examine the effects of website credibility factors on user engagement in Malaysian municipal websites. In detail, this study explores the perceptions of the website users including their perceptions on website content elements and features, their judgement of the textual and visual information, their judgement of the websites as the main source of information and

its reputation. To achieve this main objective, the following specific research questions have been derived:

- i. Which website contents those contribute to the website credibility?
- ii. What are the levels of website credibility factors?
- iii. Do website credibility factors have relationship with website user engagement?

### **1.5 Research Objectives**

The framework will be developed according to website credibility factors in influencing user engagement in informational-driven website context. The objectives of this study are:

- i. To determine website content that contribute to the websites' credibility
- ii. To examine the level of website credibility factors appropriate for the government municipal websites as perceived by the users
- iii. To investigate the relationship of website credibility factors on website user engagement

### **1.6 Research Scope**

This study emphasized on examining information-driven websites specifically Malaysia's municipal government websites which provide information contents and links to information services. The study concentrated only in terms of the look and design, information content presentation and organization, website interactivity, the credibility of the websites as the source of information, and the reputation of the organization based on the website's role as an information delivering tool from the users' perspective. In order to verify which website

credibility factors have influence on website user engagement of Malaysian municipal government websites, the validated survey instrument were disseminated among ten (10) municipal website users within the Klang Valley, Malaysia.

The Klang Valley area comprised of the urban district in Selangor and Kuala Lumpur with ten (10) jurisdictions of municipals, that are (1) Shah Alam, (2) Subang Jaya, (3) Klang, (4) Kajang, (5) Selayang, (6) Sepang, (7) Putrajaya, (8) Ampang Jaya, (9) Petaling Jaya, and (10) Kuala Lumpur. According to MCMC's Internet Users Survey (2017) as in table 1.2, Central region has the biggest population of Internet users which include districts in Selangor, Kuala Lumpur and Putrajaya with 33.6% in 2015 and increase at 37.3% in the year 2016. Therefore, municipal website users within the Klang Valley, Malaysia were selected as the target population of this study.

**Table 1.2 :** Malaysia Internet user's distribution based on region in Malaysia 2016 and 2017

Region	2015 (%)	2016 (%)
Northern	20.2	17.8
Central	33.6	37.3
Southern	13.6	14.5
East Coast	16.4	12.3
Sabah, Sarawak and W.P. Labuan	16.2	18.1

Source: Malaysian Communications and Multimedia Commission, Internet Users Survey (2017)

## 1.7 Significance of the Study

This study benefits the body of knowledge of information systems management as it results in competitive evidence towards the importance of content management in providing effective information sources in the online environment as well as making users engaged to it. It can also enhance the standing of website credibility in the context of information systems management. The researcher believes this research has fulfilled an insightful contribution in terms of ideas and

design recommendations for designers and research for both practitioners and researchers.

Theoretically, this study developed a conceptual framework of website user engagement based on website credibility factors that integrate several theories which come from the information system flow, design and communication. Previous models of website credibility were mostly derived from the communications field. However, today's websites have not only become communication tools, but also are rich with informational contents reflecting the image of the organizations. To counteract the problem of low usage of websites, integration of Flow theory, Source Credibility theory (SCT) and persuasion theory of ELM have been the focus in this research for cultivating user engagement on the websites. Flow theory has been adapted to form the expected user behaviours, either physically or emotionally affecting, while SCT and ELM are representing credibility factors such as content credibility, source credibility and reputed credibility.

In term of methodological significant, the study applied survey research approach involving an ideal sample size of respondents to represent the validity and acceptance of findings. Previous studies related to website credibility were done qualitatively, either experimental study, grounded theory with interview, or online website assessment, that have fewer involvement of users as the major objects of study. The respondents cover not only active website users but also first time website users that are taken from the physical population of the residents in the municipal areas. The conceptual framework and instrument went through the sufficient validity process and it is useful to assure fit data and relevance findings for keeping other researchers with an update and valid model. In part, the validity process such as content validity index (CVI) was calculated after getting responses from ten (10) website designers among the related municipal institutions, experts within the intellectual and academic community, as well as selected potential respondents. This method is practical and structural as this is the initial step in validating which items are to be parts of a dimension or variable, besides other validity in the next stage.



From a practical point of view, this study also proposed value-aided guidelines for web content management practices towards predicting the website credibility factors to cultivate the task of website content evaluation model for informational driven websites. The process began with mapping the website objects that fall under different types of credibility cues, and then it was structured into the surface credibility dimension. This was sub-divided into five sub-dimensions such as aesthetic, usability, navigation, content architecture and interactivity. Thus, this study will benefit website developer teams on how best to effectively design the content elements and website features that act as credibility cues, and have the sense of persuasion to influence website user engagement. It may possibly be of keen interest to web developer teams as practitioners and researchers, since this study could deliver credibility perception of users towards municipal websites and the justification toward empirical findings for a proposed framework. Overall, when aligning their digital initiatives, it is also critical for the Malaysian government to understand their users' perceptions of their information repositories and service delivery in order to achieve their aim in fostering interaction, participation, collaboration, and information sharing between the web users and the government.

## **1.8 Organization of the Thesis**

This Thesis is organized and presented in seven (7) chapters. The chapters are well-described and related to each other. Below, are some descriptions for each chapter.

Chapter one (1) Introduction describes the overview and justification of the research, research problems, research objectives and research questions. The scope and significance of the research also are included on this chapter to give insight overview of the research relevancy.

Chapters two (2) Literature Review reviews prior literatures that related to web content and design in generic, evaluation of government website and Malaysia

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