A REVIEW OF EMPIRICAL RESEARCH ON WEBSITE QUALITY MEASUREMENT MODEL BASED ON CONSUMER'S PERCEPTION

Farida
Gunadarma University, Jakarta, Indonesia
farida@staff,gunadarma.ac.id

IchwanSuyudi
Gunadarma University, Jakarta, Indonesia
ichwan@staff.gunadarma.ac.id

Nuryuliani
Gunadarma University, Jakarta, Indonesia
nryulia@staff.gunadarma.ac.id

Budi Hermana
Gunadarma University, Jakarta, Indonesia
bhermana@staff.gunadarma.ac.id

ABSTRACT

Measurement on the quality of websites is one of the important aspects that affect performance of organizations or companies starting to implement a web-based service. This paper presents the results of an analysis toward 36 scientific papers in the International Journal dealing with empirical measurements on website quality based on perception of visitors or users of the website. The widely used measurement model is theE-Servqual model by Parasuraman *et al.* (33%), the IS Success Model by DeLone and McLean (13%), Webqual by Barnes and Vidgen (11%), and Webqual^{TM} by Loiacono et al. (11%). These models are more widely applied in e-commerce context as much as 50%, followed by application in companies (17%), in internet banking (14%), and in education and health sectors (14%). The most widely used website quality dimensional measurement is privacy or security and information quality as many as 16 studies, followed by reliability/fulfillment, service quality, and quality system. Statistical techniques most commonly used is the Structural Equation Model (52.78%) to determine the direct and indirect relationships between website quality with 12 dependent variables. Some studies also use variables that function as moderator such as perceived trust, perceived usefulness, gender and education, user experience, and cultural differences.

Keyword: Website Quality, Webqual, E-Servqual, IS Success Model

1. INTRODUCTION

The development of the internet requires a new business approach, especially as a model of e-commerce and online market has begun to be applied by companies (Behravan, [27]). Some companies that previously managed their business

traditionally have begun to switch or supplement their services with portals or websites. Chen and Cheng [9] mention the term "click-and-mortar", namely: "a business model in which companies supplement their physical outlets with an online channel". Online vendors should focus on efforts to attract consumers to visit their company website through oversight of tangible variables than the intangible variables, such as electronic service quality or the so-called e-service quality(Chang and Wang, [17]).

The relationship between service quality and customer satisfaction is relatively different between traditionally managed business with an e-commerce portal (Khawaja and Bokhari, [22]). According to Díez, Coronado, and Rodrigues [18], differences in the nature of the services and features require an analysis on the factors that are most influencing toward the opinion of users, and then measurement on the quality of service on each application using a special measuring instrument can be conducted. A key challenge for e-commerce managers is to understand consumer needs and to develop a web as well as suitable back-office operations (Barnes and Vidgen, [36]).

As more and more electronic trading take place in the world of business, more studies on critical roles of website quality in attracting and retaining costumers are conducted(Loiacono, Chen, and Goodhue, [13]). Research on service quality in electronic environment or websites has already been developed since 1998 and in the early 2000s there appeared various models of website quality measurements. Based on the perspective of consumers, web quality is the basis of evaluation on the satisfaction they receive(Wu, Huang and Fiegantaram, [10]). According to Elangovan[28], user satisfaction in the information era is influenced by the quality of the website. Thus, basically website quality measure the quality of a web based on the perception of the users or site visitors. The measurement then uses certain research instrument or questionnaire, which were given several names or models in some previous studies, such as the E-Servqual, E-SQ, WebQual, Webqual[TM] and IS Success Model.

2. THEORETICAL FRAMEWORK

According to Coll, Saumell, Garcia [32], using the web in the development of commercial strategies for satisfying customers is not enough to keep the relationship between companies and customers due to the specific characteristics of the medium used or the websites. Measurement models examined in this meta-analysis are focused on four models, namely Servqual, WebQual, Webqual[TM], and IS Success Model. The first model is the measurement on the quality of website service quality based on traditional services measurement model, that is SERVQUAL found by Parasuraman. The model consists of five dimensions, namely tangibles, reliability, responsiveness, assurance, and empathy. Zeithaml, Parasuraman and Maholtra [39] propose a conceptual model for understanding and improving e-service quality, as can be seen in the figure 1.
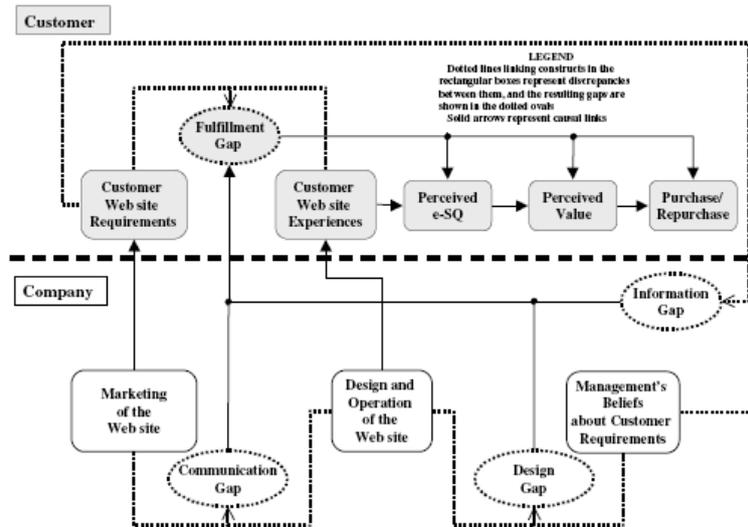
Figure 1.The Model of*E-Service Quality*(Parasuraman, Zeithamland Berry [2])

SERVQUAL scale first proposed by Parasuraman*et al.*[2] cannot be directly applied to e-services, but can be developed to measure the dimensions of e-services by adding some new dimensions suitable for e-services. Zeithaml, *et al.*[39]define e-service quality as "the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services".

The second model, WebQual, was compiled by Barnes, Liu and Vidgen [35]. WebQualmodel develops research instruments or questionnaires based on the concept of house of quality, in which the structure of the instruments is also referred to SERVQUAL. WebQual approach is by assessing website quality from the perspective of the voice of the customers, an approach adopted from the quality function deployment (QFD). WebQual model has undergone several revisions, from the first to the lastWebQual, namely Webqual4 model.

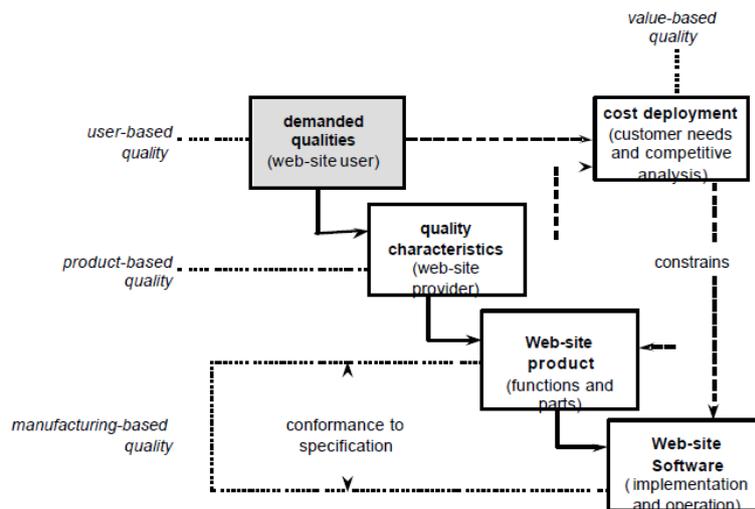

Figure2. QFD and Web-site Development (Barnes and Vidgen, [36])

The third model has similar name, which is WebQual[TM] Model, developed by Loiacono, Watson, and Goodhue [14]. This model is based on a theory or model of

3

consumer behavior in judging an object, which on its further development is applied to the product of information technology. The theory or model adapted is the Theory of Reason Action and the Technology Acceptance Model. Webqual^{TM} consists of 12 dimensions and 36 items. General description on the dimensional model can be seen in the table 1.

Table 1.Initial WebQual Dimensions (Loiacono, et al.[14])

Initial Higher Level Category	Dimension	Description
Ease of Use	Ease of Understanding	Easy to read and understand.
	Intuitive Operation	Easy to operate and navigate.
Usefulness	Informational Fit-to-task	The information provided meets task needs and improves performance.
	Tailored Communication	Tailored communication between consumers and the firm.
	Trust	Secure communication and observance of information privacy.
	Response Time	Time to get a response after a request or an interaction with a site.
Entertainment	Visual Appeal	The aesthetics of a Web site.
	Innovativeness	The creativity and uniqueness of site design.
	Emotional Appeal	The emotional effect of using the Web site and intensity of involvement
Complementary Relationship	On-Line Completeness	Allowing all or most necessary transactions to be completed on-line (e.g., purchasing over the Web site)
	Relative Advantage	Equivalent or better than other means of interacting with the company.
	Consistent Image	The Web site image is compatible with the image projected by the firm through other media

The final measurement model that measures the quality of a website is based on the IS Success Model by DeLone and McLean [41]. The instrument used for measuring the quality of a website with the IS Success model consists of three dimensions, namely information quality, system quality, and service quality. Two examples of research on the measurement of quality websites that use IS Success Model are the studies by Chen and Cheng [9] and Chen *et al.*[8]. The IS Success Model of DeLone and McLean [41] is already updated, after ten years of the introduction of the original model first published in 1992 by adding the dimension of "Service Quality". E-commerce success metrics of DeLone and McLean consist of 6 dimensions of Information Quality, System Quality, Service Quality, Use, User Satisfaction, and Net Benefit, as shown in the figure 3.
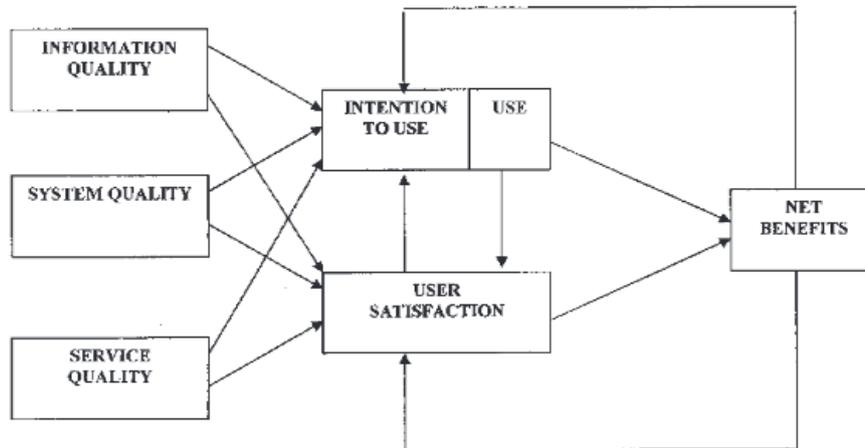
Figure 3.Updated D&M IS Success Model(DeLone and McLean, [41])

3. METHOD

The study used a meta-analysis approach that examines the results of the previous studies systematically, especially on the results of empirical research using the measurement model on website quality based on the perceptions of users or consumers. Relevant publications are collected using three sources, namely springer, proquest, and google scholar. Scientific search is done using two key words are "WebQual" and "quality website". Scientific paper selected is the empirical ones published in international journals during 2000 to 2014. The period of 2000 to 2014 was chosen due to the fact that development of website quality measurement models began to emerge in the 2000s, for example, the models of E-Servqual and WebQual.

In the first stage, the number of scientific papers suitable with the keywords was as many as 56 papers. After the contents were evaluated using the above criteria, the number of papers analyzed in the meta-analysis stage was 36 scientific papers. Details on the number of paper for each international journal can be seen in the table 2.

Table 2.The Number of Scientific Paper Analyzed

No.	Name of International Journal	Number of paper
1.	Online Information Review	6 papers
2.	Information Systems and E-Business Management	3 papers
3.	Journal of Applied Sciences	3 papers
4.	Service Business	3 papers
5.	Electronic Commerce Research	2 papers
6.	Journal of Medical Systems	2 papers
7.	*Social Behavior and Personality*	2 papers
8.	Electronic Markets	1 paper
9.	Information Systems Frontiers	1 paper
10.	International Journal of Advanced Research in Business and Management	1 paper
11.	International Journal of Arts & Sciences	1 paper
12.	International Journal of Electronic Commerce Studies	1 paper
13.	International Journal of Market Research	1 paper
14.	*IOSR Journal of Business and Management*	1 paper
15.	Journal of the Academy of Marketing Science	1 paper

No.	Name of International Journal	Number of paper
16.	Journal of Business and Psychology	1 paper
17.	Journal of Computer Science and Technology	1 paper
18.	Journal of Electronic Commerce Research	1 paper
19.	Journal of Mathematics and Computer Science	1 paper
20.	Management Research and Practice	1 paper
21.	Quality & Quantity Journal	1 paper
22.	Review of Integrative Business & Economics	1 paper

Aspects or parameters identified are (1) the object of the website or the research context; (2) the website quality measurement model becoming the basis for the research instrument; (3) the naming of the dimensions of the factors or constructs used to measure the quality of the website; (4) identification on variables influenced by the website quality serving as antecedent or predictor variables; and (5) the number of samples and statistical techniques used to test the research hypothesis. Website quality measurement model that became the focus of the meta-analysis consisted of 5 groups, namely (a) e-servqual model based, or referring to traditional servqual model proposed by Parasuraman*et al.* [2]. and Zeithaml*et al.*[39]; (b) measurement of quality websites refering to the IS Success Model of DeLone and McLean [41]; (c) WebQual model of Barnes and Vidgen[36]; (d) Website^{TM} Model of Loiacono*et al.*[13][14]*;* and (e) mixed model that incorporates multiple research models, such as the Technology Acceptance Model of Davis.

4. RESULT AND DISCUSSION

4.1 Research Context and Measurement Model

The highest number of website objects or research context was e-commerce as many as 18 studies, followed by 6 studieson firm websites, 5 studies on e-banking, and websites for 5 studies on health and education. The composition of the research context can be seen in the figure 4.
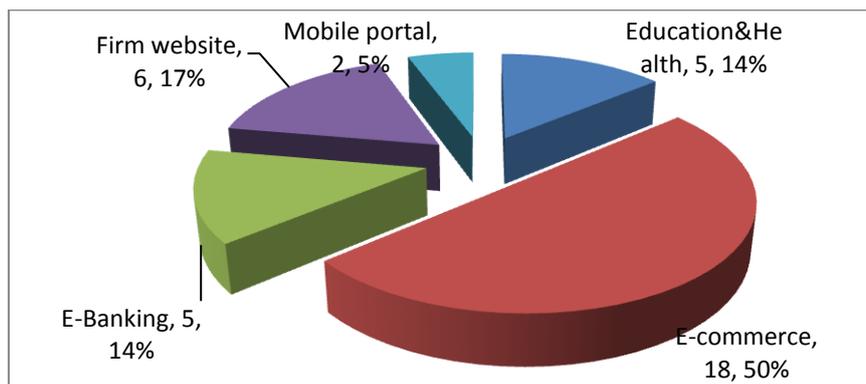

Figure4. Research context

Education websites include websites of universities and schools, as well as web-based learning sites. Research on the quality of web-based learning or e-learning has been conducted by Chen, *et al.*[8] in Taiwan and Al-Mushasha and Nassuora [29] in Jordan. The type of the most widely studied e-commerce is e-shopping, as studied by Marimon*et al.* [15] in Spain, Falk, Hammerschmidt, and Schepers [38] in German, Ulbrich, Christensen, and Stankus [16] in the USA, and Chen and Cheng [9] in Taiwan. Studies to measure quality of e-banking websites have been commissioned

by Chu, Lee, and Chao [30] in Taiwan and Sakhaei, Afshari, and Esmaili[34] in Iran. The types of companieswhose website quality measured were airlines and travel agencies or tourism companies, including the study byLuo and Lee [33] on e-ticket service quality offered by various airlines in the world based on the perception of international travelers. Studies on the measurement of the quality of mobile portal or m-commerce are still rarely carried out, the latest was by Yeh and Li [42] in Taiwan, and Lee and Park [19] in South Korea.

Determination on the research model was based on whether the research instrument was developed using all or most of the four models studied. The results show that e-servqual model is used more than the IS Success Model, WebQual Model, and Webqual[TM] Model.

Table 3. Model of Website Quality Measurement

No.	Model of Website Quality	Number of research	Examples
1.	E-Servqual	12	Marimon *et all.*[15], Chang&Wang [17], Chu, Lee & Chao [30], Sabiote,Frías&Castaneda[7], Papaioannou*etal.*[12]
2.	IS Success Model	5	Chen&Cheng [9], Chen *etal.*[8]
3.	Webqual	3	Barnes&Vidgen[36], Elangovan[28]
4.	Webqual[TM]	3	Chiou&Pan [20], Gregg&Walczak[11], Khawaja&Bokhari [22].
5.	Mixed/Other	15	Sohail&Shaikh[26], Torre-Díez*et al.*[18], Coll*etal.*[32], Lee & Park [19]

Research with mixed model uses a combination of several previous theoretical models. In addition to taking at least two of the four models as the point of concern in this meta-analysis, there are some models using other models or theories, such as the Technology Acceptance Model as performed by Yeh and Li [42] and Luo and Lee [33]. Merging models are also widely used when connecting web quality as a predictor to some dependent variablesusing Structural Equation Models.

4.2 Dimension of Web Quality Measurement
The most widely used dimensions are "information quality" and "privacy/security/safety", found in 16 studies, followed by "reliability/fulfillment" in 15 studies, "service quality" in 10 studies, and "system quality" in 9 studies. Details of the list of dimensions and the number of the studies examining them can be seen in the figure 5.
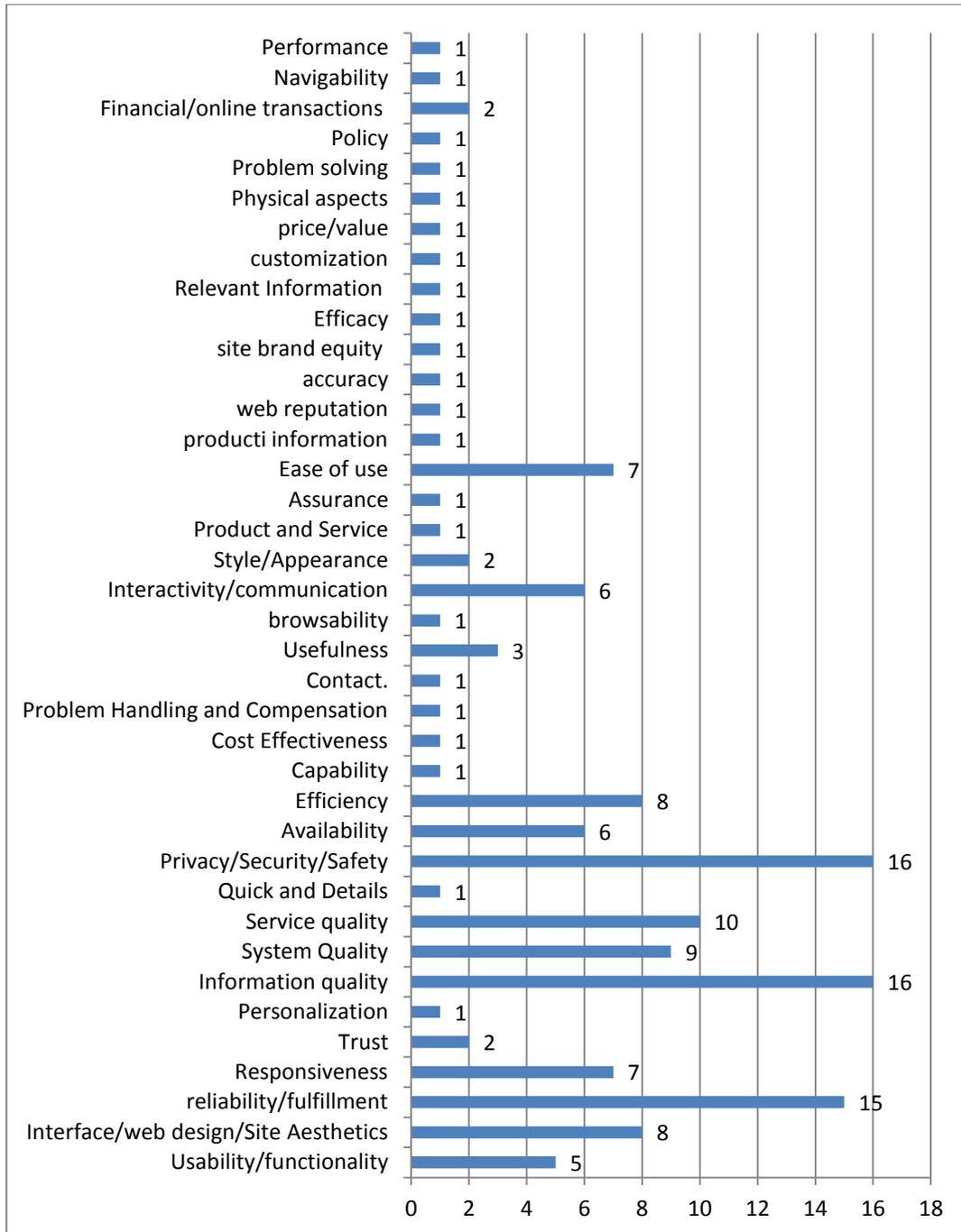
Figure 5. Dimension of Web Quality Measurement

Most of the dimensions are derived from the four-dimensional model of website quality measurements. WebQual model of Barnes and Vidgen[36] consists of three dimensions, namely usability, information quality, and service interaction quality, while the IS Success Model consists of dimensions such as information quality, quality system, and service quality. Webqual[TM] Model of Loiacono *et al.* [13][14] uses 12 dimensions, which are grouped into 4 initial higher levelcategory namely ease of use, usefulness, entertainment, and complementary relationship. The model of e-servqual of Zeithaml *et al.* [39] consist of seven dimensions of efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact.

4.3 Website Quality as Antecedent

In the early 2000s, web quality research was dominated by research oninstrumenttesting that aimed to determine the reliability and validity of questionnaires from a number of models. The models were then applied to study a variety of research contexts or different objects. In recent years, research has begun to focus on the relationship between web quality with other variables, or placing a web quality as antecedent or predictor. The variable that is affected by the quality of the web is placed as the dependent variable, which is affected directly or indirectly by the web quality. The number of variables identified is as many as 12 variables as shown in the table 4.

Table4. Dependent variable which influenced by web quality as antecedent

Model of Website Quality	Web quality as antecedent of							
	Satisfaction	Trust	Intention	Loyalty	Usage	Overall Service	Perceived Value	Others
E-Servqual	8	2		4	2	2	2	1
Webqual	1		1					
Webqual^TM	2	2	1	1				2
IS Success Model	3	1	2	2				2
Mixed	3	5	4	2				1
Total	17	10	8	9	2	2	2	6

The variable most widely used is satisfaction, followed by trust, loyalty, and intention. Six other variables used in the model as the dependent variables are asset specificity (Chiou and Pan, [20]), premium price (Gregg and Walczak, [11]), word of mouth (Ulbrich,*et al.* [16]), usefulness (Cheng*et al.*, [37]), perceived playfulness and perceived flow (Hsu*et al.*, [6]), and user disconfirmation (Papaioannou*et al.*,[12]). Several studies use moderating variables that influence the relationship of web quality as a predictorand multiple dependent variables. The moderating variables of which are perceived trust and perceived usefulness (Luo and Lee, [33]), gender and education (Sabiote*et al.*, [7]; Coll*et al.*, [32]), user experience (Lee and Park,[19]), and cultural difference (Chen*et al.*, [21]).

4.4 Statistical Analysis

The most widely used statistical analysis is Structural Equation Model (SEM) as many as 19 (52.78%). Several statistical techniques used in the study can be seen in the table 5.

Table 5.Statistical analysis used in web quality studies

No.	Statistical Method	Number of research	Samples		
			Minimum	Maximum	Average
1.	Factor Analysis	4 (11,11%)	154	939	464
2.	Independent sampe t test	3 (08,33%)	50	170	121
3.	Correlation Analysis	2 (05,56%)	384	2099	1242
4.	Regresion Analysis	8 (22,22%)	50	330	208
5.	Structural Equation Model	19 (52,78%)	131	1219	448

Factor analysis is used to test the reliability and validity of the instrument so that the structure of the questionsis in accordance with the needs of the users. One method used was Confirmatory Factor Analysis (CFA) to measure the validity and reliability of the whole latent variables. The results of CFA can be used to eliminate questions that are neither reliable nor valid, or to re-classify some questions into a new dimension. The results of the analysis of these factors can cause changes to the

number of dimensions and items of questions, and changes to dimensions themselves, compared to the instrument composed at the beginning of the study.

When web quality is used as antecedent or predicting variables associated with the other variables, then several statistical tests are used for verification of research hypotheses. Independent sample test or ANOVA is used to see the difference of a variable among samples of particular groups, as done by Kumbhar [40], that is to see the different perceptions of customers of state banksand those of private banks; or the study by Ulbrich *et al.* [16]which aims to see the different perceptionsof men and women. The relationship ofweb quality with other variables can also be tested with correlation analysis as performed by Papaioannou *et al.*[12] to look at the relationship betweenweb quality and user satisfaction, and the results show that not all web quality dimensions can be associated with the level of satisfaction.

More complex model relationships are tested by regression analysis and SEM. According to Yeh and Li[42], SEM is a multivariate technique which combines multiple regression analysis with confirmatory factor analysis to simultaneously estimate a series of interrelated dependence relationships. One advantage of SEM is that it can determine the direct and indirect influence of one variable to other multiple variables using simultaneous equations or structural equations. One advantage of SEM is that it can handle complex models with a number of observed and latent variables, measuring the level of measurement error, as well as the ability to estimate the value of all variables in the network (Gregg and Walczak, [11]). Researchers can determine the fit between the theoretical models with the observed data, and determine causal relationships between the latent variables (Wu *et al*., [10]).

5. SUMMARY

Differences in characteristics of traditional service and electronic services require new approaches in the measurement of customer service, those who visit or do online transaction. The approach can be done by asking website visitors or customers to evaluate the features or characteristics of web-based services according to their perceptions. There are four popular measurement models used as a reference in the study arranged based on the number of the studies using them are e-servqual, IS Success Model, Webqual^{TM}, and WebQual. Given the fact that these four models were initially applied to e-commerce, further studies must implement them in different research contexts, for example to measure the quality of a website of non-business organizations such as education and health organizations. This will make changes in the number and names of dimensions and the number of items tailored to characteristics of the website.

Development on studies related to web quality showthat WebQual model is associated with variables related to the characteristic and behaviors ofconsumers by including other variables affected by the variable of website quality. Four other variables most widely used are "user satisfaction", "trust", "loyalty", and "intention to use". The link between the dimensions of web quality with actual consumer behavior has been considered by the inventors of the E-SERVQUAL model and the IS Success Model; this has caused many subsequent studies to refer to the models. The complexity of subsequent research model is characterized by a structural equation model and the

inclusion of other variables as moderators affecting the relationship between web quality and consumer behavior.

REFERENCES

[1] A. Gnanlet and H.M.Y.Kullu. Impact of national culture on the quality of information delivery in services. *Service Business*, 8, 135–169, 2014.

[2] A. Parasuraman, V.A. Zeithaml. and L.L. Berry. A conceptual model of service quality and its implication. *Journal of Marketing*, Vol. 49, Fall, 41-50, 1985.

[3] A.S. Mahmud. Factors Affecting the E-service Quality in Malaysian Banks. *International Journal of Advanced Research In Business and Management*, 1(1), 1-11, 2013.

[4] B.W. Keating, A.M. Quazi, and A. Kriz. Financial risk and its impact on new purchasing behavior in the online retail setting. *Electronic Markets*, 19, 237–250, 2009.

[5] C. Kai, W. Xiaofan, Z. Qiuying, and L. Huanhuan. An Exploratory Study of Influence Factors about Consumers's Online Group Buying Intention. *Journal of Applied Sciences*, 13(8): 1370-1375, 2013.

[6] C.L. Hsu, K.C. Chang, and M.C. Chen. The impact of website quality on customer satisfaction and purchase intention: perceived playfulness and perceived flow as mediators. *Information Systems and E-Business Management*, 10, 549–570, 2012.

[7] C.M. Sabiote, D.M. Frıas, and J. A. Castaneda. E-service quality as antecedent to e-satisfaction: The moderating effect of culture. *Online Information Review*, 36 (2), 157-174, 2012.

[8] C.Y. Chen, R.E. Chang, M.C. Hung, and M.H. Lin.Assessing the Quality of a Web-based Learning System for Nurses. *Journal of Medical Systems*, 33, 317–325, 2009.

[9] C.W. Chen and C.Y. Cheng. How online and offline behavior processes affect each other: customer behavior in a cyber-enhanced bookstore. *Quality & Quantity Journal*, 47, 2539–2555, 2013.

[10] C.W. Wu, K.H. Huang, S.Fiegantaram, and P.C.Wu.The impact of online customer satisfaction on the yahoo auction in Taiwan. *Service Business*, 6, 473–487, 2012.

[11] D.G. Gregg and S. Walczak. The relationship between website quality, trust and price premiums at online auctions. *Electronic Commerce Reseacrh*, 10, 1–25, 2010.

[12] E. Papaioannou, C. Assimakopoulos, C. Sarmaniotis, and C. K. Georgiadis. Investigating customer satisfaction dimensions with service quality of online auctions: an empirical investigation of e-Bay. *Information Systems and E-Business Management*, 11, 313–330, 2013.

[13] E.T. Loiacono, D.Q. Chen, and D. L. Goodhue. Webqual^TM Revisited: Predicting The Intent To Reuse A Web Site. *Eighth Americas Conference on Information Systems*, proceeding, 301-309, 2002.

[14] E.T.Loiacono, R.T.Watson, and D. L. Goodhue.Webqual: Measure of Website Quality. *Marketing Theory and Applications*, 13, 432-438, 2002.

[15] F. Marimon, R.Vidgen, S. Barnes and E. Cristóbal. Purchasing behaviour in an online Supermarket: The applicability of E-S-QUAL. *International Journal of Market Research*, 52(1), 111-130, 2010.

[16] F. Ulbrich, T. Christensen, and L. Stankus.Gender-specific on-line shopping preferences. *Electronic Commerce Research*, 11, 181–199, 2011.

[17] H.H. Chang and H.W. Wang. The moderating effect of customer perceived value on online shopping behavior. *Online Information Review*, 35 (3), 333-359, 2011.

[18] I.T. Díez, L. L.Coronado, and J.J.P.C. Rodrigues. How to Measure the QoS of a Web-based EHRs System: Development of an Instrument. *Journal of Medical Systems*, 36, 3725–3731, 2012.

[19] J. Lee and M.C.Park. Factors affecting the smartphone users to use the mobile portal services: focusing on Korean mobile Portals. *Information System and E-Business Management*, 11, 235–252, 2013.

[20] J.S. Chiou and L.Y. Pan. Antecedents of Internet Retailing Loyalty: Differences Between Heavy Versus Light Shoppers. *Journal of Business and Psychology*, 24, 327–339, 2009.

[21] J.V. Chen, D. C. Yen, W. Pornpriphet, and A. E. Widjaja. E-commerce web site loyalty: A cross cultural comparison. *Information Systems Frotiers*, Springer Science Business Media New York, published online 14 May 2014.

[22] K.F. Khawaja and R.H.Bokhari. Exploring the Factors Associated With Quality of Website. *Global Journal of Computer Science and Technology*, 10 (14), 37-45, 2010.

[23] K.L. Hsiao, J.C.C. Lin, X.Y.Wang, H.P. Lu, and H.Yu. Antecedents and consequences of trust in online product recommendations: An empirical study in social shopping. *Online Information Review*, Vol. 34 No. 6, pp. 935-953, 2010.

[24] L.S. Liong, M.S.M.Arif, H.H.Tat, A.Rasli, and A.Jusoh. Relationship between Service Quality, Satisfaction, and Loyalty of Google Users. *International Journal of Electronic Commerce Studies*, 2(1), 35-56, 2011.

[25] M.S.M. Ariff, N.S. Yan, N. Zakuan, and N. Ishak. Web-based Factors Influencing Online Purchasing in B2C Market: View of ICT Professionals. *Review of Integrative Business & Economics*, 2(2), 572-586, 2013.

[26] M.S. Sohail and N.M. Shaikh. Internet banking and quality of Service: Perspectives from a developing nation in the Middle East. *Online Information Review*, 32 (1), 58-72, 2008.

[27] N. Behravan, M. Jamalzadeh, S. F. Jouya, and A.Y.Z. Markhali. The Study of Factors Associated with Trust towards Customers's Loyalty within Online Setting. *Journal of Applied Sciences*, 12 (22), 2312-2318, 2012.

[28] N. Elangovan. Evaluating Perceived Quality of B-School Websites. *IOSR Journal of Business and Management*, 12 (1), 92-102, 2013.

[29] N.F. Al-Mushasha and A.B. Nassuora.Factors Determining E-Learning Service Quality in Jordanian *Higher EducationEnvironment.Journal of Applied Sciences*, 12 (14), 1474-1480, 2012.

[30] P.Y.L.Chu, G.Y. Lee, and Y. Chao. Service Quality, Customer Satisfaction, Customer Trust, and Loyalty in An E-Banking Context. *Social Behavior and Personality*; 2012; 40, 8; ProQuest Sociology, 1271, 2012.

[31] R. Gera. Effects of Online Service Quality Dimensions on Satisfaction, Value and Behavioral Outcomes. *International Journal of Arts & Sciences,* 4(12), 123–140, 2011.

[32] S.F. Coll, R. P.Saumell, J. S. Garcıa, and J. C. F.Roig. Airline website loyalty formation and the moderating effects of gender and education. *Service Business*, 7, 255–274, 2013.

[33] S.F. Luo and T.Z. Lee.The Influence of Trust and Usefulness on Customer Perceptions of E-Service *Quality.Social Behavior and Personality*, 39(6), 825-837, 2011.

[34] S.F.Sakhaei, A.J. Afshari, and E. Esmaili. The Impact of Service Quality on Customer Satisfaction in Internet Banking. *Journal of mathematics and computer science*, 9, 33-40, 2014.

[35] S.J. Barnes, K. Liu, and R. T. Vidgen. Evaluating Wap News Sites: The Webqual/M Approach. *Proceeding of The 9th European Conference on Information Systems*, Bled, Slovenia, June 27-29, 344-355, 2001.

[36] S.J. Barnes and R.T. Vidgen.An Integrative Approach to The Assessment of E-Commerce Quality. *Journal of Electronic Commerce Research*, 3(3), 114-127, 2002.

[37] S.Y. Cheng, M.T. Tsai, N.C. Cheng, and K.S. Chen. Predicting intention to purchase on group buying website in Taiwan: Virtual community, critical mass and risk. *Online Information Review*, 36(5), 698-712, 2012.

[38] T. Falk, M. Hammerschmidt, and J.J.L. Schepers. The service quality-satisfaction link revisited: Exploring asymmetries and dynamics. *Journal of the Academy of Marketing Science*, 38, 288–302, 2010.

[39] V.A. Zeithaml, A. Parasuraman, and A. Malhotra (2002). Service Quality DeliveryThrough Web Sites: A Critical Review of Extant Knowledge. *Journal of the Academy of Marketing Science*. 30 (4), 362-375, 2002.

[40] V.M. Kumbhar. Customers' Satisfaction in ATM Service: An Empirical Evidences From Public and Private Sector Banks in India. *Management Research and Practice*, 3 (2), 24-35, 2011.

[41] W.H. DeLone and E.R. McLean.The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, Spring 2003, 19 (4), 9–30, 2003.

[42] Y.S. Yeh and Y.M. Li. Building trust in m-commerce: contributions from quality and satisfaction. *Online Information Review*, 33(6), 1066-1086, 2009.