

# A Study on Evaluation of E-Government Service Quality

Nguyen Manh Hien

**Abstract**—Service quality is the highest requirement by users, especially for the service in electronic government. During the past decades, it has become a major area of academic investigation. Considering this issue, there are a lot of researches that evaluated the dimensions and e-service contexts. This study also identified the dimensions of service quality, but focuses on a new concept and provides a new methodology in developing measurement scales of e-service quality such as information quality, service quality and organization quality. Finally, this study will suggest a key factor to evaluate e-government service quality better.

**Keywords**—E-government, e-service, e-service quality, dimensionality.

## I. INTRODUCTION

THE massive penetration of Information Communication Technology (ICT) and the ICT application in the public sector during the past decade has brought a new method in delivering services at all levels, which includes citizens, businesses and government alike, with the purpose to provide an efficient management of government information, giving better services and transparency to the community. Thus, the quality of service has an important significance, especially the service quality of internet environment (e-service). In fact, the customers are requiring the highest quality more and more, while the providers have to improve the service quality by upgrading operational processes, identifying problems quickly and measuring customers' satisfactions as well as other performance outcomes to meet the needs of customers' expectations.

There are a lot of researches that have focused on e-government service quality under the impact of service quality and information quality, with various approaches. These include SERVQUAL [1], E-Q-QUAL [2], User-perceived web quality [3], online service quality [4], Quality Model for Portal Data [5], E-Service Quality [6], Quality aspects in design and use of Web sites, WebQual [7], or Consumer Perspective of E-Service Quality [8]. However, among e-service quality studies, few have addressed organization quality on public e-service, and very little research has been conducted using a comprehensive and integral approach to explore e-government service quality. Therefore, this study aims to clarify service quality based on the dimensions of perspective then developing a new measurement

scale and finding the main keys to evaluate e-government service quality.

In the context of this study, citizens and businesses are considered as customers for e-government service, providers are considered as government issues the service.

## II. DEFINITION AND FACTORS AFFECTED ON SERVICE QUALITY

### A. Definition

Service quality is defined under many different perspectives, based on customer's perspective, service performance, customer expectations, and perceptions of service. According to Gronroos, service quality was described as the difference between the expected service and the perceived service. Many prior studies defined service quality as the extent to which a service meets customers' needs or expectations as in [9]-[12]. Parasuraman defined service quality as the comparison between customer expectations and perceptions of service [13]. Based on these definitions, service quality can be defined as a measure of how well a delivered service matches the customers' expectations.

### B. Factors Affected on Service Quality

According to Parasuraman et al., e-government service quality is affected by system quality and information quality including ten detailed dimensions: Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding and Tangibles. Numerous studies have shown that e-service quality is affected by the same two factors, service quality and information quality, as in [3], [4], [14]-[20].

To evaluate the efficiency and service quality, this study focuses on another important factor, which is the internal process inside organizations or known as organization quality perspective. It is difficult to study every aspect of e-government services within the scope of a single research. Therefore, it is essential to limit the area on which research can focus. Some typical dimensions will be selected to research:

#### 1. Service Quality Perspective

As mentioned in the definition, service quality is a measure of how well a delivered service matches the customers' expectation. In this research, Self-Service technology and Service marketing were chosen to identify perceived of service quality.

Self-Service technology (SST) refers to the technological interfaces that enable customers to produce a service independent of direct service employee involvement [21]. SST plays an importance role for e-government promotion, it can deliver services to all citizens directly, for example, in

Nguyen Manh Hien is PhD candidate at GSAPS, Waseda University, Japan. He is also a research assistant at Waseda Institute of e-Government since 2011 (phone: +81-80-4797-8558; e-mail: nguyen.hien@akane.waseda.jp).

Singapore, the government has established many kiosks with internet to introduce information, e-service to all citizens, businesses and travelers. SST has some advantages; it keeps the costs down, providers' easy access to information, alternate methods of support, and delivery better service quality.

Service marketing was first developed by Gronroos [22], and later elaborated by Kotler. It was based on three component organizations, providers and customers. The linkage among these components is internal marketing, external marketing and interactive marketing. Parasuraman enhanced the original service marketing triangle by adding a technology factor, and called it a service marketing pyramid. A service encounter can be seen as a dynamic interaction among employees, the company, and its customers. In the promotion of e-government, the service marketing is the main key on how to deliver e-service. Based on the importance role of Self-Service technology and Service marketing, there are three key dimensions selected for analysis:

**Reliability**—the service provider's ability to provide accurate and dependable services

**Communication**—customer awareness and easy access providers' service, keeping customers informed through multiple channels

**Responsiveness**—a firm's willingness to assist its customers by providing fast and efficient service performance.

## 2. Information Quality Perspective

Information quality can be defined under many different perspectives. From the information perspective, information quality is defined as information that meets specifications or requirements [8]. From the user's perspective, it is defined as information that is fit for use by information consumers [23]. Information quality refers to the information characteristics of information system (IS), it directly affects the use of IS, is one of the most important factors driving the information systems success. In this research, perceived information quality is considered under information system and technology acceptance aspects.

A lot of researches have focused on how ICTs improve the efficiency effectiveness of a system. One of the most famous model proposed by Davis, called "Technology Acceptance Model - TAM" [24], TAM focused on the influence by perception and emotion toward technology using, particularly the new technology adoption behavior of users. In this research, this model represents the technology acceptance aspects. Two major factors in this model are: the Perceived usefulness (PU) and Perceived ease-of-use (PEOU). The other model is the information system success model, it was proposed by DeLone and McLean [25], and it has also been found to be a useful framework for organizing IS success measurements. The updated model in 2003 clarified the relationship between system quality, information quality and service quality.

Based on the TAM model and IS success model, this study explored some dimensions related to information quality that significantly influences the adoption of e-government service quality. Three dimensions are selected for analysis:

**Ease of use**—in the context of e-government service quality, ease of use can be defined as the understanding of online index, website contents as well as the information and description of product or service. Ease of use is an important dimension of e-service quality.

**Contents**—it includes quantity, quality, accuracy and customized information.

**Trust and Security**—it is a very important dimension for using service online. It includes the policies to protect data, information and all transaction processes.

## 3. Organization Quality Perspective

Organization is considered as one of the essential elements of quality system. In the context of service quality, the organization term is used to indicate the management and support of the organization. It includes all internal processes to deliver e-service to citizens. Unlike other studies, this study considers organization quality as one important key to analysis quality of service. It is related to internal processes in organization (back office); therefore, e-Governance and Chief Information Officer (CIO) are two dimensions that the research will focus on.

**E-Governance**—related to improve information and service delivery by using ICT and encourage citizen participation in the decision-making process. It makes government more accountable, transparent and effective. This dimension concerns the management issue. Based on this dimension the transmission of information and service to customers can be more optimal and effective.

**CIO**—The CIO is one type of executive position in an organization. There are two different type of CIO, CIO in the public sector known as Government CIO (GCIO) and Business CIO refer to the person who works in the private sector (e.g. company). Nowadays, the role of GCIO is becoming increasingly important and e-Government initiatives require a high degree of specialization and knowledge about citizens' needs and government procedures [26]. In the context of e-government development, CIO plays a critical role not only in technical aspect but also in the ability of an organization to derive business value from information technology (IT). From the organization point of view, CIO strategic assets are more likely to create business value through IT and thereby achieve superior business performance. To clarify the role of CIO in the evaluation of service quality and answer the question, what are the effects of CIO on service quality, this study included CIO as a key variable and a new measurement scale for e-service quality assessment.

## III. RESEARCH MODEL AND HYPOTHESES

### A. Theoretical Framework and Research Model

The theoretical model is presented in Fig. 1. The proposed research model includes eight variables based on three main categories perspective: Service quality, information quality and organization quality.

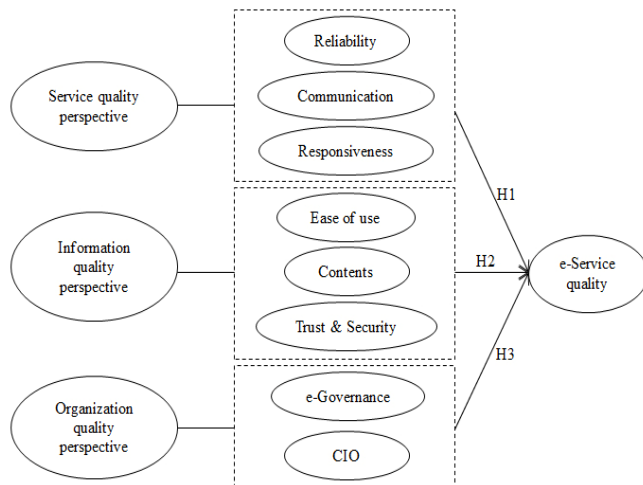


Fig. 1 Research model

### B. Hypotheses

The selection of six variables was based on previous e-government service quality studies: Reliability, communication, responsiveness, ease of use, contents, trust, and security. Furthermore, two variables – e-government and CIO – were developed and included in the current study. Based on this research model, three hypotheses are summarized:

H1. Perceived service quality positively influences the perceived e-Government service quality:

The service quality constructs mostly conceptualized context of service marketing and self-service technology literature review. Therefore, it deals with the concept of perceived service quality. According to Parasuraman [27] perceived service quality is the extent to which a provider successfully serves the purpose of customers. Self-Service Technologies refers to “technological interfaces that enable customers to produce a service independent of direct service employee involvement, which is very important in delivering e-service to citizens. Thus, perceived service quality positively influences the perceived e-Government service quality

H2. Perceived information quality positively influences the perceived e-Government service quality:

The information quality constructs mostly conceptualized context of information system and technology acceptance (TAM). This study proposes perceived information quality as a factor of perceived ease of use (PEOU), perceived contents and perceived trust and security which will directly affect intention to use the service, so perceived information quality positively influences the perceived e-Government service quality.

H3. Perceived organization quality positively influences the perceived e-Government service quality:

A successful organization is one which could adapt itself, create a purposeful management structure and develop key competencies [25]. In this study e-Governance and CIO were chosen for evaluation. CIO is a new concept and has a major impact on e-Government development. CIO increasingly plays an important role in building a successful e-government. This study selected CIO as a key factor in delivering and supporting e-service quality. Therefore, perceived organization quality

positively influences the perceived e-Government service quality.

## IV. RESEARCH METHODOLOGY

### A. Data Collection

To collect the data to verify all dimensions and testing the hypotheses, the survey by questionnaire will distribute to persons who understand e-service, service quality and especially know CIO. The list of people receives the questionnaire based on the mailing list of International Academy of CIO which is held biennially in Japan. To verify the factors proposed in this study, a questionnaire will be sent by direct email or posted online.

### B. Methodology

The purpose of this research is to identify the service, information and organization quality characteristics, based on case study of e-Tokyo service in Japan. For this purpose some previous researches literature were reviewed to clarify these characteristics. Beside the literature review, this study will use the quantitative approach to test the quality critical empirically. To test the hypotheses, a methodology called Partial Least Squares (PLS) will be employed in this study to verify the path relationship. The PLS method is a useful alternative to Covariance-based Structural Equation Modeling (SEM) and it can be a powerful method of analysis due to the minimal demands regarding measurement scales, sample size, and residual distributions [28].

## V. FUTURE STUDY

This study is an ongoing research, and now in a period of data collection processes. In the next step, the study will focus on:

Firstly, based on the theoretical framework and research model, a questionnaire will be designed with eight dimensions and 48 items. The detail of items is listed: Reliability (6 items), Communication (5 items), Responsiveness (5 items), Ease of use (5 items), Contents (6 items), Trust and Security (6 items), e-Governance (8 items) and CIO (8 items). The questionnaire will be measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). There will be 48 questions in the questionnaire, starting with a cover letter describing the purpose of the questionnaire. To execute the survey, the questionnaire will be translated into Japanese and will be pre-tested by experts. In addition to the items in each dimension, the questionnaire also contains questions regarding the respondent’s information such as their age, education, and sex. These questions are beneficial for demographic analysis.

Secondly, questionnaire will be sent to participants by direct email and post online within one month. The raw data will be collected and gathered into an excel file.

Thirdly, using PLS to check all the variables, factors analysis (manifest variable), model quality (composite reliability, average variance extracted), correlation of latent variables and also structure model with coefficients.

Fourthly, from the result of thirist step, the study will test the hypotheses based on the model proposed.

Finally, based on the results, conclusions will be drawn on whether the model will be accepted or not. Also, it will be investigated which dimensions affect the e-government service quality.

#### REFERENCES

- [1] Joan Buckley, Managing Service Quality Emerald Article: E-service quality and the public sector.
- [2] Siriluck Rotchanakitumnuai, Measuring e-government service value with the E-GOVQUAL-RISK model, Department of Management Information Systems, Thammasat University, Bangkok, Thailand. Business Process Management Journal
- [3] Aladwani, A.M., Palvia, P.C., Developing and validating an instrument for measuring user-perceived web quality. *Information and Management* 39 (6), 2002, pp .467–476.
- [4] Cai, S., Jun, M., Internet users' perceptions of online service quality: A comparison of online buyers and information searchers. *Managing Service Quality* 13 (6), 2003, pp504–519.
- [5] Caro, A., Calero, C., Caballero, I., Piattini, M., Defining a data quality model for web portals. 7th International Conference on Web Information Systems Engineering (WISE 2006)
- [6] Xenia Papadomichelaki and Gregoris Mentzas. e-GovQual: A multiple-item scale for assessing e-government service quality, *Government Information Quarterly* 29, 2012, pp98–109.
- [7] Janowski, T. Building the Foundation for Sustainable Electronic Government: Experience, Lessons and Framework. OBI, T. (ed.) *The Innovative CIO and e-Participation in eGovernment Initiatives*, IOS press, 2010.
- [8] Strong, D. M., & Kahn, B. K., Eds. *Proceedings of the 1997 Conference on Information Quality*. Cambridge, MA: Massachusetts Institute of Technology, 1998.
- [9] Asubonteng, P., McCleary, K.J. and Swan, J.E., "SERVQUAL revisited: a critical review of service quality", *Journal of Services Marketing*, Vol. 10, No. 6, 1996, pp62-81.
- [10] Barbara R. Lewis, Vincent W. Mitchell, "Defining and Measuring the Quality of Customer Service", *Marketing Intelligence & Planning*, Vol. 8 Iss: 6, 1990, pp11 – 17.
- [11] Gefen, D. E-commerce: the role of familiarity and trust. *International Journal of Management Science*, Vol. 8, No. 6, 2002, pp.725-37.
- [12] Wisniewski, M. & Donnelly., M. Measuring service quality in the public sector: The potential for SERVQUAL. *Total Quality management*, 7, 1996, pp357-364.
- [13] Parasuraman, A., Zeithaml, V.A., Berry, L.L. SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing* 64, 1988, pp12–40.
- [14] Barnes, S.J., Vidgen, R.T., An integrative approach to the assessment of E-commerce quality. *Journal of Electronic Commerce Research* 3 (3), 2002, pp. 114–127.
- [15] Jun, M., Yang, Z., Kim, D., Customers' perceptions of online retailing service quality and their satisfaction. *International Journal of Quality and Reliability Management*, 21 (8), 2004, pp817–840.
- [16] Li, Y.N., Tan, K.C., Xie, M., Measuring web-based service quality. *Total Quality Management and Business Excellence* 13 (5), 2002, pp685–700.
- [17] Loiacono, E.T., Watson, R.T., Hoodhue, D.L. WEBQUAL: measure of web site quality. *Marketing Educators Conference: Marketing Theory and Applications* 13, 2002, pp432–437.
- [18] Parasuraman, A., Zeithaml, V.A., Malhotra, A., E-S-Qual: A multiple-item scale for assessing electronic service quality. *Journal of Service Research* 7 (3), 2005, pp213–233.
- [19] Sohn, C., Tadisina, S.K., Development of e-service quality measure for internet-based financial institutions. *Total Quality Management and Business Excellence* 19 (9), 2008, pp903–918.
- [20] Yang, Z., Fang, X., Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services. *International Journal of Service Industry Management* 15 (3), 2004, pp302–326.
- [21] Meuter, M.L., Ostrom, A.L., Roundtree, R.I., and Bitner, M. J., "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters," *Journal of Marketing*, Vol.64, 2000, pp. 50-64.
- [22] Gronroos C., "Service, Management and Marketing", Lexington, Massachusetts. Toronto D.C. Health and Company, 1990.
- [23] Jorge Cardoso et al, Quality of Service for Workflows and Web Service Processes, *Journal of Web Semantics* (accepted, to appear 2004), Elsevier
- [24] Davis, F.D., "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, Vol.13, No.3, 1989, pp. 319-340.
- [25] DeLone, W. H., & McLean, E. R., Information system Success: The quest for dependent variable, *Information system research* 3:1, 1992.
- [26] Arre Zuurmond, Pim Jorg, Ted Dicks and Barry Woudenberg, Information quality as a mirror of government excellence, Q Emerald Group Publishing Limited VOL. 11, NO. 4, 2007, pp33-50.
- [27] Parasuraman, A., Grewal, D., The impact of technology on the quality-value-loyalty chain: a research agenda. *Journal of the Academy of Marketing Science* 28 (1), 2000, pp168–174.
- [28] Chin-Hao, Chang dissertation, 2011.