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## Measuring E-government service value with the E-GOVQUAL-RISK Mode

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### Abstract

This paper studies the e-government service quality and risk perceptions of personal income tax payers on e-government service value. The study uses qualitative in-depth interview and content analysis to explore the determinants of e-government service quality and risk dimensions of e-government service value. The findings suggest that perceived value of e-government service is e-government service quality, which consists of service design, website design, technical support, and customer support quality. On the other hand, the three perceived risk concerns are performance, privacy, and financial audit risk. The results can assist e-government service design not only to increase electronic service quality but also to reduce risk facets in order to enhance e-government service value and enlarge acceptance from income taxpayers.

**Keywords:** e-government service, E-GOVQUAL-RISK

### 1. Introduction

Electronic service via the Internet channel has a great impact on changing business and government operations. Electronic service can assist in enhancing service to customers and reducing operation costs to the organizations. Unlike interpersonal operations, electronic service entails greater risks to online users. Such risks include security concerns, and distrust of electronic service providers [10]. In quality management, one major factor that influences online users to adopt electronic service is the quality of the system. Many studies have developed a number of electronic service quality models [9][14][15]. Unfortunately, these models of electronic service quality are conceptualized in different ways and have found little consensus.

In the government sector, many government bureaus have realized the importance of using the Internet channel to provide service to citizens [2]. One of the successful cases of implementing electronic government (e-government) service is the Internet tax payment system - so called the e-revenue system - implemented by the Revenue Department of the Thai government. Half of the income tax payers use e-revenue to pay personal income tax during the past three years. Nevertheless, some citizens have shown unwillingness to complete tax payment via the Internet channel, primarily due to risk concerns. The value perception of e-government service rises if citizens perceive lower risk and higher service quality. These two prominent dimensions are remarkably different from prior studies due to citizen concerns about policy of the e-government service. The e-revenue system is a good e-government service context for developing factors influencing e-government service value as this system provides not only information but also transaction services via the web system. There is little published work on perceptions of e-government service, particularly in the context of developing countries in the dynamic Asian region. E-government service in much of Asia is somewhat less well accepted than in the West, and the role of personal relationships is somewhat stronger. Only a little work covers Asia, usually Singapore or Korea, which are not representative of all Asian countries. Thus, to gain deeper understanding of the issues in the Thai context, this study aims to identify the dimensions that citizens use to assess value creation of e-government service in two perspectives: service quality and risk in e-government service or the E-GOVQUAL-RISK model. The paper addresses two research issues:

- What are the dimensions of e-government service quality?
- What are the dimensions of perceived risk in e-government service?

### 2. Theoretical Background and Research Framework

Service quality is widely used as a key indicator of excellence in traditional service. Superior service quality has an impact on adoption decisions. Parasuraman *et al.* [8] have developed the SERVQUAL model to measure service quality reliability, responsiveness, assurance, empathy, and tangibles. Electronic service quality dimensions, in contrast, are different from the traditional service quality in terms of human and technology interaction, website design and interface. Current studies of online service quality have found little guidance regarding electronic service quality via the web channel. For example, Parasuraman *et al.* [10] find two categories of online service quality: e-core service

and e-recovery service quality. E-core service consists of four dimensions: efficiency, fulfillment, system availability, and privacy. E-recovery service consists of three dimensions: responsiveness, compensation, and contact. Yoo and Donthu [14] propose four dimensions of e-service quality: ease of use, aesthetic design, processing speed, and security. Zeithaml *et al.* [16] propose seven service quality dimensions: efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact.

Many studies focus and cover only the website quality. Specific to electronic service, the way electronic service quality model should cover the whole processes of service, such as service design, channel or website design, technology support, and customer support quality. Electronic service design refers to the specification and construction of technically web-based processes that deliver valuable service capabilities to customers. The experience of dealing with a smooth and well service design can directly influence customer acceptance in a very positive way (e.g., easy format and process design) [11][12][13]. In addition, website design quality is important as it is an interface channel between users and the electronic service system and attracts online users to visit the websites. Technical support quality is one major factor that supports the electronic service to perform efficiently. Finally, customer service quality has to include both online and interpersonal service.

In many cases, consumers may not purchase product or service, even if they perceive a high service quality value in a product or service. High perceived risk related to purchase product or service is important in consumption or adoption decision. Risk is commonly conceived as an uncertainty regarding possible negative consequences of using a product or service. Marketing scholars have proposed multiple types of risks, including financial, psychological, performance, physical, and social risk [4]. Perceived risk has the impact on electronic service acceptance. Studies related to electronic commerce indicate that perceived risk is a main barrier towards acceptance [1][3][5]. High risk in the Internet technology environment is a major concern, mostly because of security and privacy. Featherman and Pavlou [3] find five indicators of electronic service risk: psychological, financial, privacy, performance, and time risk.

This research explores the importance of five risk facets that adversely affect the e-government service value adapted from the review of the literature: performance risk (a risk that the service will not work as expected), privacy risk (a risk that user's personal information may be misused), financial risk (a risk that users may have to pay more money), time risk (a risk that wastes time of the user as a result of making a wrong decision), and social risk (the potential change of status in one's social group as the result of adopting a product or service).

### 3. Methodology

This research conducts a qualitative study to explore the determinants of service quality and risk dimensions of e-government service. A face-to-face in-depth interview is used to obtain a better initial understanding and to identify these concepts [6][7]. A total of 30 income tax payers are interviewed. They are all selected by judgment sampling to cover a range of occupations, e.g., bankers, accountants, marketers, engineers, dentists, physicians, and pharmacists.

### 4. Findings and Discussion

#### *E-service quality value*

The findings from the content analysis review that the service design of the e-revenue system provides valuable system. The interviewees who have experience filing personal income tax via the Internet think that on-line tax payment is fast, convenient and easy to use. There is no need to go to the Revenue Department office or branch to pay for tax. Even those who have not had any experience with on-line tax payment agree with this. Following are comments from the interviewees:

*“Easy to use as it's similar to the form I had used. The online format is clear and nice.”*

*“Even those who never use this system and those who are not familiar with the Internet can use the system easily.”*

In addition, the e-revenue system provides incentive to use. This service design can motivate the tax payers to use the system with faster tax refund. Besides less complication and incentive of the e-revenue service design, tax payers feel that this system also provide variety of services such as personal tax, corporate tax, and value added or sales tax filing. The following quotes from tax payers represent this view:

*“The e-Revenue users said that the advantage of e-Revenue is the fact that the tax return is made very quickly.”*

*“The tax return is received in no time.”*

However, e-revenue system does not provide customized service to tax payers. For instance, each occupation has specific conditions to file the personal income tax and some professions are more complicated in filing and calculating income tax. One e-revenue user criticizes that:

*“It’s much better to provide customized income tax filing, e.g., tax filing for each profession, tax filing for tax payers who have many types of income.”*

*“I can not use the e-Revenue as I need to calculate complicated tax or pay for extra tax.”*

In addition, the in-depth interviews suggest that the website design of the e-revenue system has good quality of design. Electronic service providers should pay attention to this aspect because it creates value to the users in terms of quality information, interface, and aesthetic. One interviewee believes that e-revenue system should be accurate, and also be able to search for required information. For example, the personal tax payers highlight the importance of website quality of the e-revenue system as following:

*“It’s easy to read. Website’s color is also nice. I’m able to find information I want and understand how to use.”*

*“The texts on the website are clear. Website design is good.”*

*“The website is well-organized. It is good comparing to other governmental organizations’ websites. The information is more updated and can be found easily. It’s easy to find relevant data, e.g. there are samples of tax paying process.”*

Although many tax payers feel satisfied with the website quality, some interviewees mention the weak point of the website design of the current e-revenue system. The following quotes from respondents are representative of this viewpoint:

*“In general, it’s good. There should be more links to related information.”*

*“The letters are a bit small. I can’t find all the information I look for.”*

Additionally, this study finds technology support quality as one important determinant of electronic service, consistent with previous study. Notably, many respondents have expressed concern regarding the slow access system and reliability. The following statements highlight this issue:

*“I used to have problems paying tax on-line. The system was very slow when there were many people accessing the system.” (u11)*

*“I can download very quickly. For good quality technical system, the e-Revenue should have the technical support for high volume transactions, especially the last week of March, which is the last week for filing income tax.” (u15)*

*“The e-revenue system is important because it stores all income data, the Revenue department needs to have the good backup system.” (u2)*

E-revenue users feel that the system should have a higher degree of responsiveness to online tax payers. Electronic service provider should pay careful attention to customer support aspects in terms of online and interpersonal support. For instance, one respondent mentions that:

*“I am not sure that the tax filing is completely accepted, do I need to send more document or payment? Besides e-mail response, it will make online users feel better if the system provides a feedback to us whether the tax payment transaction is correct so that we do not have to worry.”*

#### *Perceived risk concern*

The study has found out that perceived risk is a crucial determinant that decreases e-government service value. The impact of perceived risk is likelihood of adverse acceptance. The two groups perceive risk at different levels. Internet-based tax payers believe that e-revenue system has some level of performance reliability. In contrast, non-Internet based income tax payers are not sure about filing tax payment transactions via the Internet, and they perceive e-revenue system as highly untrustworthy. The following statements illustrate these points:

*"I am quite confident. I believe the system have been carefully designed, tested and ready to be used on-line. Otherwise, there will be many problems."*

*"For the confidence on data such as income/figures, payment transfer and calculation, I think if the data provided is accurate, the calculation should be accurate."*

Regarding the risk of using e-Revenue, many e-revenue income tax payers are rather confident in the system. They believe that the system has been developed for sometime. It can be used easily and information can be filled quickly. Tax calculation is made correctly. Still, they do have some concern of privacy risk. Some are not sure if their personal data will be kept confidential. Moreover, e-revenue tax payers have to be responsible in keeping all the income documents in case of future audit from the Revenue Department, as shown in the following statements:

*"I am not sure if my personal data will be kept private. There are many people who have access to the information."*

*"I don't like to pay tax via the e-Revenue system because I have to keep all the income documents with me for 5 years. Currently, I pay tax and submit the income documents at the e-revenue department, no responsibility for keeping the document"*

Concerning the possibility of being audited, e-revenue users seem to consider this issue as relatively unimportant. Many interviewees agree that tax payment via the e-revenue can also be audited like paying tax at the Revenue Department office or branches. For non-users, the concerns of the policy of online post audit of the income tax payment had the highest frequency of mentions, indicating that this is one of the perceived financial risks of e-revenue adoption. The following statement demonstrates these issues for non-users:

*"The on-line payment provides us with reference documents. In case there is any request for back duty, there will be an audit for sure."*

*"There will be more audits for the on-line tax payment. And I'm not sure if it will be fair enough as there is no any electronic payment tax law support the e-revenue system."*

Most of the in-depth interviewees are those who frequently use computer and Internet for information search and e-mail, and therefore tax payers do not feel that time risk is a barrier for e-revenue adoption. E-revenue users feel the system is not too difficult to use and have to spend much time on filing the income tax. When the e-revenue system does not work, tax payers can use the interpersonal service from the branch. There is no penalty for failing to file the tax payment via the web. The following statements support the lack of time risk in e-government service:

*"On-line tax paying is convenient, it's much easier and faster."*

*"We can pay tax from home or office. No need to go to the local office. No queuing, or need to be upset with the staff, except when the e-revenue system fails."*

Additionally, the in-depth interview shows that e-revenue adoption does not create social risk. In the e-revenue context, this study excludes social risk as adoption of e-revenue service as it does not change the social status of the users. It is possible that paying income tax has less involvement among friends or peers. It is mostly related to personal financial income information and has less interpersonal information sharing. In addition, non e-revenue users feel that they do not feel embarrassed for not using e-revenue or being low technology service oriented. One non-user income tax payer mentions:

*"I don't use e-revenue and don't think that e-revenue adoption will create social risk. Normally, I never disclose my income to others."*

## **5. Conclusion**

The first component of e-government service quality is service design quality. The service design quality is comprised of four items related to variety of service, uncomplicated service processes, easy to use format, incentive to use, and customized service design. The second component is website design quality. Website design quality refers to aesthetic of website design, understandable term, information linkage and searching, highlighted of new information. Technical support covers technology architecture quality that supports security, high transaction volume, speed, and backup of

data. Finally, customer support factor is related to prompt online feedback after transaction submission, online helpdesk, and provide speedy interpersonal service to resolve customer problems.

Secondly, this study identifies the various dimensions of perceived risk that affect the value of e-government service, which in turn are adversely related to citizen service adoption intention. Perceived risk is one of the most frequently cited reasons by online users for not making transactions on the Internet channel. This study shows three types of risks in e-government service: performance risk, privacy, and financial audit risk. The performance risk comprises three issues related to reliability, ability to save the tax filing transaction for future usage or editing, and risk of the system being hacked. Privacy risk is related to privacy of personal data, misuse of data by the e-service provider, and the taxpayer's burden of keeping all the income documents for five years. Finally, financial audit risk factor covers the risk of being audited easily, tax liability in case of additional future audit, and no specific electronic commerce law for e-revenue service.

While the dimensions shows several electronic service quality and perceived risk aspects that are previously identified and studied, the findings of this study do have some unique characteristics related to the e-government service setting. E-government service providers need to optimize of e-government service value by enhancing e-service quality and lowering risk of e-government service.

## 6. Implications and limitations

The electronic service quality measure developed in this study is designed to provide an effective tool to measure electronic service through the whole service chain starting from service design, channel or website design, technical and customer support. E-government service providers can use the research model to detect service quality strengths and weaknesses. The quality assessment can assist in allocating resources to important service quality issues uncovered by this study, since these factors have strong relationships with adoption acceptance and future usage intention of the e-government service users. Further, as customers become accustomed to technology in their lives, most customers are unlikely to prefer the extreme of only interpersonal service without any Internet options.

However, few are likely to prefer only Internet, either, with no possibility of ever dealing with people, especially in Asia's culture which is oriented towards personal relationships. This indicates that service channel integration should be a key concern when e-government service is implemented. To create e-government service value requires bringing about technology investment and support into the whole service development process. Thinking about the structural design and management of the network and Internet technology cannot be separated from the overall service system. In addition, this study suggests that perceived risk of e-government service can delay the adoption. Personal income tax payers perceived financial risk as post audit and fair legal support for future tax payment audit. This seems the combination of financial and psychological risk perceived by the respondents. Psychological risk arises from potentially negative outcome from having e-revenue transactions via the Internet. E-government service providers need to include perceived risk of users in the checklist for e-government project value assessment. The negative perceptions arising from perceived risk of e-government service may influence future intention to use e-government service. Government agencies should communicate with citizens with reasonable and fair policies, guarantee safety, technological reliability and service quality in order to inspire trust in electronic service and retain current users to employ e-government service. If the perceived e-government service quality is high enough, non-users may be willing to take a reasonable risk to obtain the desired value. To decrease customers' anxiety concerning whether the tax filing transaction has been accepted, the Revenue Department should develop the e-government service tracking system for citizens to check the status of the tax payment. This solution will enable personal income tax payers to shift their decision from unwilling to use to more trust and willing to adopt as the higher value creation of the e-government service development. Future research can expand the results to other group of tax payers such as corporate taxpayers associated with the e-service quality, trust, and organization culture concepts.

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