User Satisfaction of E-government Procurement Systems in Developing Countries: An Empirical Research in Indonesia

Completed Research Paper

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Abstract

An electronic-procurement system becomes important for governments to make their procurement procedures more efficient, effective, and transparent in order to decrease cost, corruption, and abuse of public resource, particularly in developing countries. However, the literature on the e-procurement system has been developed in a lop-sided manner. Many studies have been focused on the supply (government's) perspective in developed countries using a case study method. To fill this gap, this paper studies an e-procurement system that the Indonesian government provides in the demand (vendor's) perspective using a quantitative data (the survey of 49-vendor) analysis. Particularly, this research concentrates on how multi-dimension service convenience and performance failure of the e-procurement system are related to user satisfaction through positive and negative disconfirmation constructs. Perceived benefit convenience and information failure among other factors in service convenience and performance failure are the most significant factors that are positively and negatively related to user satisfaction, respectively.

Keywords: E-government, e-procurement, user satisfaction, developing countries, SERVQUAL
Introduction

The demand for electronic government (e-government) services has increased as more people have become familiar with electronic business (e-business). In this paper, e-business refers to all business activities over electronic systems such as Internet and other networks-based information and communications systems. E-business also includes electronic commerce (e-commerce), which means all activities related to the process of selling, buying, paying, transferring, and exchanging goods over electronic systems. Meanwhile e-government refers to various interactions between a government and its citizens (G2C), government and businesses (G2B), government and other governments (G2G), and government and employees (G2E) over electronic systems (Siau and Long 2009).

The transformation of a conventional government towards an electronic government in conducting administrative works (e.g., delivering services to citizens and procuring goods from suppliers) has been gradually increasing worldwide. The advancement of e-business and e-commerce technologies is the source of this transformation (Wimmer et al. 2001). Unfortunately, the wide gap prevails between developing and developed countries in adopting these technologies. Around 95 percent of e-commerce takes place in developed countries while the developing countries are accounted for the rest (UNCTAD secretariat 2003).

In e-business, electronic procurement is one of the most widely used applications for companies (Davila et al. 2003). An e-procurement system enables companies to automate transactions with multiple suppliers in sourcing goods. Companies have recognized that this system providing business-to-business transactions reduces a cycle time and increases productivity (Gunasekaran and Ngai 2008).

An e-procurement system can also be applied in the public sector to solve administrative matters (Moon 2005). This system allows a government to arrange online public tenders (opening bidding processes to all qualified bidders). Government agencies interact with companies in acquiring goods through the Internet. A government influences its national economy through purchasing goods over the market (UNCTAD secretariat 2003). Thus, it is significant for the government to reach out and provide an equal opportunity to all possible companies in procuring goods. The e-procurement system allows companies (vendors) to be flexible in terms of time, cost, and effort in participating in public tenders (Donthu and Garcia 1999). This is especially true for developing countries such as Indonesia. Some companies who are geographically located far away (e.g., another island) from a central government office have difficulties with being physically present whenever there is a public tender. However, these companies can easily participate in public tenders if governments use an e-procurement system, assuming that they can access the Internet.

Another important role of an e-procurement system is that it helps to minimize corruption related to governmental procurement. In the government sector, procurement possibly leads to corruption, collusion, and the abuse of public resources, especially in developing countries (Liao et al. 2002). An e-procurement system can make the whole procurement procedure visible and transparent to prevent, or at least minimize, corruption related to governmental procurement. For example, a government releases an announcement online including evaluation criteria for public tenders. Companies bid through the government’s e-procurement website. The information that companies submit will be stored and can be tracked. Based on the bidding information, the most appropriate company will be selected as a supplier for the government. This trackable and publicly accessible system makes it possible for the e-procure process to be more visible and transparent.

Considering these two important roles of e-procurement (dissolving geographical boundaries and preventing corruption), developing a convenient and well-performing e-procurement website becomes important to increase the companies’ participations in public tenders (Szymanski and Hise 2000).

Considering the practical importance of e-procurement in the area of e-government, it is surprising that there is not much research on e-procurement, especially from the vendors’ perspectives in developing countries. Although much e-government research has focused on the G2C relationship, some studies have paid attention to the G2B relationship in the last decade. Among those studies, some researchers have focused on e-government procurement from the view of a government. However, as proven in the Information Systems (IS) adoption research, it is significant to bring the perspective of users (vendors) in diffusing information systems. In particular, as information systems and technologies have stabilized over
time, there is a need to research other potential determinants (e.g., service convenience) beyond conventional factors (e.g., perceived usefulness and ease of use) that can influence users’ perceptions in the adoption and use of an information system.

For these practical and academic reasons, this paper develops a research question: what are factors that influence user (vendor) satisfaction of an e-government procurement system in developing countries? To answer this research question and identify other determinants than the traditional factors in the IS adoption literature, we develop and propose a model based on the literature review regarding three areas – service convenience, disconfirmation theory (originally, from psychology) from the marketing literature, and performance failure from the IS literature. When a system becomes stabilized, service convenience emerges as an important factor for people when adopting and using goods. However, it does not mean that the system is perfectly stable, as it can still fail due to informational, systematic, or functional problems. When failure occurs, it can impact users, disappointing them more than on previous occasions, due to their increasingly high expectations of performance. Therefore, the more specific research question is how the service convenience and performance failure of an e-government procurement system affect company (vendor) satisfaction.

E-government procurement has attracted quite a bit of attention in existing literature. For instance, researchers have presented the importance of stakeholders’ collaborations and alliances (Devadoss et al. 2003; Kumar and Peng 2006), the impact of e-procurement (Croom and Jones 2007), the relevant technical process (Liao et al. 2002; Panayiotou et al. 2004), and the acceptance and resistance of an e-government procurement (Wirtz et al. 2010). However, these findings relied on data from the experience of employees and team leaders or project managers who were responsible for e-procurement development and implementation instead of data from vendors as users. This paper extends our knowledge of the e-government procurement study by introducing and analyzing users’ satisfactions from the perspective of the vendor-side (demand-side). Thus, we surveyed 49 companies (vendors) who have participated in public tenders operated by the Indonesian government. The results suggest that users’ (vendors’) experiences with service convenience and performance failure play a critical role in measuring their satisfaction level in e-government procurement research. Consequently, this discovery can be used by governments to design and implement their e-procurement systems.

In the next section, we first explain the literature review in e-government and service marketing. Second, we develop our theoretical model and research hypotheses. Third, we present a research method including data collection and a measurement setting. Fourth, we analyze the collected data. Finally, we discuss the result and findings, implications, limitations, our suggestion and the conclusion.

**Literature Review**

In this section, we will discuss literature related to e-government relationships (government to business) in the field of information systems (IS) and service convenience and disconfirmation theory within the field of marketing studies. As mentioned, the e-government literature includes G2C, G2B, G2G, and G2E. This paper focuses only on the G2B (Government to Businesses) area, especially from the business (users’ or vendors’) perspective. Next, the evolution and importance of the service convenience literature is discussed. Finally, the disconfirmation theory is introduced and linked to service convenience in the context of e-government procurement.

**Government-to-Business (G2B)**

Many studies in e-government have focused on Government-to-Citizen (G2C) relationships, such as, issues relating to a G2C initiative by a government (e.g., Seifert and Petersen 2002) and citizens’ perceptions toward e-government services (e.g., Lee et al. 2009; Mirchandani et al. 2008; Wang 2008; Verdegem and Verleye 2009). For the last decade, some researchers have paid attention to Government-to-Business (G2B) relationships. These researchers particularly studied the perceived benefits of a G2B initiative, for example, the increase in efficiency via cost and time reductions (Panayiotou et al. 2004; Seifert and Petersen 2002; Tung and Rieck 2005). Therefore, those perceived benefits become important factors for governments when adopting G2B e-services (Obeidat and Abu-Shanab 2010; Tung and Rieck 2005). For the successful implementation of a G2B system, success factors such as a government’s structure and users’ participations are identified (Devadoss 2003; Kumar and Peng 2006). In addition,
major obstacles such as cost, privacy, security, and technical problems (accessibility, usability, etc.) are recognized (DeBenedictis et al. 2002). These studies are from the government’s perspective.

However, it is also significant to study the G2B relationship from the other side, the perspective of business, meaning that of the view of companies (vendors) as users. Without the participation of companies, G2B systems become useless. Researchers have focused on how companies evaluate G2B e-services (e.g., Awan 2007; Gotoh 2008; Zhao et al. 2007). For instance, companies who have doubts about security do not conduct transactions even though they visit a G2B website (Awan 2007). Another example is regarding service quality, such as information content, web navigation, interactive service, transaction service, and intelligent services, because they are relevant to companies’ satisfaction levels (Zhao et al. 2007). A company’s satisfaction is important for governments diffusing their G2B systems.

Within G2B systems, an e-procurement is one of the most widely used applications (Alsaghier et al. 2009), because this system can make a procurement procedure transparent to prevent corruption as mentioned previously (Liao et al. 2002). Similar to general G2B studies, researchers (e.g. Croom and Jones 2007; Panayiotou et al. 2004) focused on success factors such as simplified process, management commitment, interoperability with current communication systems, and internal service in delivering the system. This perspective is again from the government’s perspective during the planning and implementation stages of an e-procurement system. To our surprise, there has not been a lot of research done on G2B systems from the business (companies’) perspective.

Studies focusing on specific cases of e-government procurement were mostly conducted from the point of governments as policy makers, initiators, facilitators and developers (e.g. Kumar and Peng 2006; Panayiotou et al. 2004). In terms of a research method, many studies were based on particular cases and a few studies (e.g. Croom and Jones 2007; Wirtz et al. 2010) used a survey method even for G2B studies. There is a lack of studies on e-procurement systems from the business perspective with concrete quantitative data. A public procurement is important in a national economy and the transparency of procurement procedures is required, especially for developing countries. Under these circumstances, governments’ electronic procurements can play a significant role in reaching out to more companies that are geographically limited and making procedures transparent. The fate of an e-procurement system relies on companies’ (vendors’) as well as governments’ initiatives and implementations. Companies who want to participate in public tenders must use necessary services through an e-procurement website. Thus, it is important to study the business perspective of e-procurement services, because companies will participate in public tenders more if they perceive e-procurement services as convenient and stable. For this reason, this paper focuses on how companies’ experiences with service convenience and stability of an e-procurement service influence their satisfaction levels.

**Service Convenience and Performance Failure**

Convenience is important in order to satisfy and maintain relationships with consumers and users who make purchases and use given services. In marketing literature, researchers began to study the concept of convenience in terms of consumer products (e.g., Brown 1989; Copeland 1923; Murphy and Enis 1986). Copeland (1923) defined convenience goods as distributed products requiring minimal time and effort to purchase. Then, subsequent literature identified convenience as an attribute of a product (Elgar 1978). Brown (1989) argued that convenience should be seen as a multidimensional construct and then proposed dimensions of convenience – time, place, acquisition, use, and execution – for marketing consumer products.

The importance of convenience in service marketing became salient in the literature. In the service industry, convenience is one of the aspects used to evaluate the service quality besides perceived fairness, empathy, responsiveness, and reliability (Andaleeb and Basu 1994). The convenience perceived by customers will affect their perceptions of satisfaction with services. Customer response over waiting time is considered an indicator to measure convenience (Hui, Thakor, and Gill 1998), so managing waiting time can influence customers’ satisfaction (Taylor 1994).

Regarding online services, there are a few studies focusing on the importance of convenience. Donthu and Garcia (1999) found that consumers tended to shop online because of convenience. Consumers perceive that online shopping reduces time to shop, increases flexibility in timing for shopping, and saves the physical efforts of visiting stores (Donthu and Garcia 1999). Besides the website design and security,
Szymanski and Hise (2000) identified convenience as a factor that influenced online customers to purchase without distinguishing individual dimensions of service convenience. The online service convenience has multi-dimensions as mentioned. To understand users’ satisfactions of online services in depth, we need to measure each dimension of service convenience.

Seiders et al. (2007) developed and validated a multidimensional service convenience scale. They conceptualized five dimensions of service convenience based on how consumers perceived time and effort in buying or using a service. They identified five independent dimensions of service convenience (access, decision, transaction, benefit, and post-benefit) as stages of service experience. In this paper, we adopt these five dimensions to measure service convenience in an e-government procurement website. A definition and example of each dimension will be comprehensively discussed in the section of Research Model and Hypotheses.

Although the service convenience literature has focused on the perspective of consumers in the marketing literature, it is still reasonable to apply service convenience in studying the perspective of vendors of an e-government procurement system. First, a vendor refers to a seller, while a consumer implies a buyer. However, in the context of an e-government procurement setting, the vendor is a user of the e-procurement system instead of a provider. As consumers are the users of e-commerce websites provided by a company, vendors are the users of e-procurement websites provided by a government. As the company wants to provide more convenience for consumers who use their websites for e-commerce activities, the government wants to provide more convenient e-procurement websites for vendors to participate in public tenders. Thus, as users, the service convenience is important to the vendors who use e-procurement websites. Second, someone can argue that a government, acting as the buyer, is able to dictate vendors’ procedures by making all tenders online only. This is possible for the case of many developed countries that have a high penetration of wired or wireless broadband and the availability of a highly educated workforce. However, it is not the case for many developing countries. In developing countries, many e-government initiatives require necessary equipment (hardware and software) are provided as well as that people are educated. In fact, these governments put a lot of effort into making their websites as simple and convenient as possible for less-educated people. Third, a government as a public entity needs to provide an equal opportunity to all companies that wish to supply goods. However, not all companies have the same resources and capabilities. Therefore, it is in the interest of the government to provide more convenient websites to all possible companies. For these reasons, adopting the service convenience from the consumer marketing literature is justifiable in researching vendors’ perceptions of an e-government procurement system.

For online services, a performance failure is a critical determinant for people in use of the services. The performance failure occurs when an e-procurement website does not work as it promises, for example, information on the website is not useful in getting a desired outcome; a transaction is not performed; or a page is not loaded. Although service convenience is high, users will be dissatisfied if a minor performance failure occurs. When different types of performances (e.g. information, system, and function) work smoothly, people do not usually notice any problems and take them for granted. Therefore, any type of performance failure only negatively influences user satisfaction, so online service providers need to manage any kind of failure in a timely and proper manner (Holloway and Beatty 2003).

In this paper, we investigate three types of performance failures (information, system, and function failures), because they are some of the most dissatisfactory failures in online services. Information failure refers to when a website with an online service does not provide useful or helpful information for users to obtain their desired outcomes. Function failure means that a website of an online service does not properly perform transactions. System failure implies that the service content of a website is not appropriately accessible (e.g. does not load).

**Disconfirmation Theory**

We will examine the relationship between each dimension of convenience and user satisfaction through the expectancy-disconfirmation theory. This theory rooted in consumer behavior and marketing research has been used to explain consumer satisfaction (Oliver 1980). The theory is about how the discrepancy, which is also called disconfirmation, between expectations and actual experiences of a service or product influences customer satisfaction. A better experience than expected with goods leads to *positive disconfirmation*, and a worse experience than expected with goods leads to *negative disconfirmation*.
(Oliver 1980). Satisfaction is a critical factor for people to repurchase services or products (Oliver 1980). Considering the relationship between disconfirmation and satisfaction, disconfirmation is important in the study of people’s satisfactions of goods.

Based on this theory, service convenience is related to positive disconfirmation, because people do not create high expectations about each dimension of service convenience until they experience it. For this reason, positive service convenience leads to better experiences. If there is no service convenience, it does not mean inconvenience but simply means that there is no value to add to the experience. Therefore, service convenience is relevant to positive disconfirmation.

The three types of performance failure (information, function, and system) are only related to negative disconfirmation. When people use online services, they expect to be able to access necessary information and service content, and then execute transactions. Therefore, any of these failure experiences incites negative disconfirmation. However, no failure occurring is unrelated to positive disconfirmation, because using an online service without any of these failures only confirms people expectations.

**Research Model and Hypotheses**

The objective of our study is to understand people’s experiences with e-procurement services that the Indonesian government provides. This research investigates how the five dimensions of service convenience (access, decision, transaction, benefit, and post-benefit) of an e-government procurement website are related to positive disconfirmation; how the three types of performance failures (information, function, and system failure) are relevant to negative disconfirmation; and lastly how the positive and negative disconfirmations are related to users' satisfaction.

In **access convenience**, consumers perceive time and effort as costs when they need to take actions for services (Berry et al. 2002). Service delivery capacity such as physical location, online availability and operating hours determine the convenience at the time users access services. From an online perspective, access associates with the availability of devices (e.g., computer and laptop) and Internet connections (e.g., broadband and wireless network). In the context of e-procurement, a service provider needs to present various services through its portal so that users can access them easily. The availability, capacity and capability of information systems (e.g., skills, hardware, network, and software) are related to the accessibility and participation of users (Seifert and Petersen 2002). They eventually determine user satisfaction with e-government services (Verdegem and Verleye 2009). Therefore, ease of access and speedy delivery will reduce the time and effort that users spend while accessing services. The better the access convenience is, the more positively users perceive the convenience of e-procurement services than was expected.

**H1:** Users' experiences with e-procurement regarding access convenience are positively related to positive disconfirmation.

Regarding **decision convenience**, consumers devote time and effort as costs in making decision to purchase or use services (Berry et al. 2002). In e-procurement services, users perceive time and effort expenditures to decide how they utilize services. The availability and quality of the information about services influence decision convenience before users start to experience the services (Seiders et al. 2007; Tan and Benbasat 2009). The more obvious the information direction and instruction are on an e-procurement site, the more convenience users perceive on decision. In the marketing literature, decision convenience positively influences consumers’ repurchase intentions and behaviors (Berry et al. 2002; Seiders et al. 2007). In the perspective of the disconfirmation theory, consumers’ positive disconfirmation will increase if their experiences on decision convenience exceed their expectations.

**H2:** Users’ experiences with e-procurement regarding decision convenience are positively related to positive disconfirmation

Regarding transaction convenience, consumers spend time and effort when they conduct and finalize transactions (Berry et al. 2002). Online transactions include ordering services, filling online forms, authenticating, paying, etc. In the context of e-government, a transaction is a stage where a two-way communication is needed between a government and either citizens or companies (Layne and Lee 2001). Either a citizen or a company interacts with a government through the e-government website (e.g., downloading, filling out, and uploading forms) and the government responds to the citizen or company
For e-procurement, vendors have to conduct various transactions in providing their goods or services to government agencies. A government gives announcements about tender procedures and requirements. Vendors need to follow the given procedures (e.g., downloading and filling out electronic forms). Long waiting time and much effort that vendors must take lead to transaction inconvenience. For this reason, simplified processes for transactions are very important. Positive disconfirmation will result from users’ positive experiences with transaction convenience.

H3: Users’ experiences with e-procurement regarding transaction convenience are positively related to positive disconfirmation.

Consumers perceive time and effort as costs when experiencing the benefits of services. For instance, home shoppers tend to purchase books online because of the benefits of online shopping. These benefits include the ability to search, order, pay, and obtain books easily through an online store without leaving their homes. In term of e-government procurement services, vendors tend to use services in order to participate in government procurements. Both government and vendors have recognized the benefits of e-procurement services (Panayiotou et al. 2004; Tung and Rieck 2005). E-procurement websites should be designed in such a way where users realize the efficiency and transparency of websites as benefits. Thus, positive disconfirmation can be determined by users’ positive experiences with benefit convenience.

H4: Users’ experiences with e-procurement regarding benefit convenience are positively related to positive disconfirmation.

Post-benefit convenience refers to the time and effort that consumers spend on service maintenances, exchanges, or failure recoveries after using services.

In an e-procurement context, users (vendors) tend to reinitiate contact with a government due to tracking transactions, resolving transactional problems, or complaining about failures if they occur. Possible problems include issues related to helpdesk service, payment, and security (Holloway and Beatty 2003). Service failure causes users’ complaints in the post-benefit phase. In this phase, recovery efforts need to be taken on by a government in order to handle users’ reactions to these service failures. The ability of a government to manage service recoveries is important to prevent post-benefit inconvenience. If users perceive minimal loss of time and effort expended during recovery, post-benefit convenience will be increased (Berry et al. 2002). The availability of service features allowing users to track or retrieve every recorded transaction or process they have conducted can reduce complaints about service failures. Thus, users’ positive experiences with post-benefit convenience leads to positive disconfirmation.

H5: Users’ experiences with e-procurement regarding post-benefit convenience are positively related to positive disconfirmation.

DeLone and McLean (2003) proposed a framework for measuring e-commerce system success. The framework presents how quality constructs (system, information and service quality) influence usage, user satisfaction, and net benefit. System quality refers to the desired characteristics of an e-commerce system such as usability, reliability, adaptability, and response time (e.g., download time). Information quality implies issues related to e-commerce content such as completeness, ease of understanding, personalization, relevance, and security. Service quality refers to the overall support delivered by a service provider such as assurance and responsiveness. This model has been used to measure the successes of e-government services (e.g., Wang 2008; Gotoh 2008). On the basis of this theory, we develop and conceptualize the failure constructs in measuring users’ dissatisfactions of e-government procurement. We adapt two dimensions of the quality construct (information and system) from DeLone and McLean’s IS success model and change them into dimensions of failure constructs. We add a functional dimension instead of the service dimension, because the service is too broad for the failure constructs. The function failure refers to any problem related to transactions. Thus, we identify information, system, and function failures as formative constructs that lead to negative disconfirmation. We argue that users expect smooth performances at least in these three dimensions, and any failure experience in these areas influences negative disconfirmation.

Information failure occurs when e-procurement users encounter inaccurate information and inappropriate content that are not helpful in obtaining a desired outcome from a given transaction. For example, if users are unable to find the information about the outcome of a certain transaction due to
unclear directions and inappropriate content. The greater the information failure is, the higher the negative disconfirmation will be.

**H6:** Users’ experiences with e-procurement regarding information failure are positively related to negative disconfirmation.

System failure occurs when users are unable to properly access service content that they want during a transaction because of technicalities such as network, hardware, or software problems. For example, if vendors try to access certain content by clicking a button and the content does not load in a timely manner. People expect the content will load once they click, so this type of system failure leads to negative disconfirmation.

**H7:** Users’ experiences with e-procurement regarding system failure are positively related to negative disconfirmation.

Function failure occurs when users conduct a transaction. For example, if functions related to downloading forms and ordering services do not work properly, these are function failures. Users expect that all functions operate appropriately when they try to perform transactions through an e-procurement website. Thus, any function failure related to transactions leads to negative disconfirmation.

**H8:** Users’ experiences with e-procurement regarding function failure are positively related to negative disconfirmation.

If users’ experiences with e-procurement services are better than their expectations, they will build a positive disconfirmation and it will affect their satisfaction with the overall e-procurement website.

**H9:** Positive disconfirmation is positively related to e-procurement users’ satisfaction.

On the other hands, users perceive a negative disconfirmation if their experiences with e-procurement services do not meet their expectations. Eventually, it negatively influences their satisfaction with the overall e-procurement website.

**H10:** Negative disconfirmation is negatively related to e-procurement users’ satisfaction.

Figure 1 shows the hypothesized conceptual model.

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**Research Method (Sample and Procedure)**

The data used to test the hypotheses were obtained from experienced users of an e-procurement system that the Indonesian government provides. In 2004, the first e-procurement system, called National e-
Procurement Government of Indonesia (NePGI) was funded and established by the World Bank. The objective of the e-procurement system is to create good governance by eradicating corruption and increasing transparency and accountability. The Ministry of Communication and Information Technology that managed the system developed it further and changed the name of the system to Sistem e-Pengadaan Pemerintah/ System of Electronic Government Procurement in 2006. Then, the ministry has promoted the system to many central and local government agencies (e.g., Ministry of Agriculture and Province of Banten). SePP is an application that has the modules of different procurement activities (e.g., e-announcement, e-tendering, e-purchasing, e-selection, etc.). All vendors and government agencies across Indonesia, central as well as local governments, can utilize the services provided by SePP once they are registered in the system. Since the ministry simplified and updated the system, the number of vendors registered in the SePP system has increased from 150 in 2007 to 4445 companies in 2011.

To investigate users’ experiences, we surveyed the vendors that have experienced SePP. We distributed the questionnaires to the vendors by both delivering a paper-based form and emailing an electronic form. First, we distributed 100 paper-based questionnaires at the helpdesk office of SePP. It resulted in a sample of 40 responses. Second, we directly emailed the online form to 40 vendors and obtained 11 responses. Then, we removed 2 respondents because of incomplete responses. Consequently, we took 49 samples to be analyzed using a Structural Equation Modelling (SEM) technique. Table 1 illustrates the basic information of respondents.

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Age of Company (vendor)</th>
<th>Company location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>48.98%</td>
<td>4.08% DKI Jakarta 67.35%</td>
</tr>
<tr>
<td>20-50</td>
<td>26.53%</td>
<td>18.37% Jawa Barat 26.53%</td>
</tr>
<tr>
<td>51-100</td>
<td>14.29%</td>
<td>30.61% Surabaya 4.08%</td>
</tr>
<tr>
<td>More than 100</td>
<td>10.20%</td>
<td>46.94% Lampung 2.04%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company type (product/service)</th>
<th>Annual revenue</th>
<th>Usage Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office supplies</td>
<td>6.12% 10 - 50 Million</td>
<td>6.12% 1-5 times 61.22%</td>
</tr>
<tr>
<td>IT, Computer &amp; Electronics</td>
<td>38.77% 50 - 100 Million</td>
<td>4.08% 6-10 times 18.37%</td>
</tr>
<tr>
<td>Media &amp; Advertisement</td>
<td>10.20% 100 - 500 million</td>
<td>24.49% &gt; 10 times 4.08%</td>
</tr>
<tr>
<td>Equipment</td>
<td>10.20% 500 million -1 billion</td>
<td>28.57% Not Mentioned 16.33%</td>
</tr>
<tr>
<td>Consultancy</td>
<td>12.24% &gt; 1 Billion</td>
<td>30.61%</td>
</tr>
<tr>
<td>Construction</td>
<td>6.12% Not Mentioned</td>
<td>6.12% Manager 55.10%</td>
</tr>
<tr>
<td>Others</td>
<td>16.33%</td>
<td>38.78% Employee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not Mentioned 6.12%</td>
</tr>
</tbody>
</table>

Respondents were first asked about their company’s information such as annual income, age, location, the number of employees, and usage of SePP services. Then, the respondents were instructed to answer the questions in a five-point likert scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. To assess e-procurement users’ experiences, we use eleven constructs comprised of five dimensions of service convenience, three dimensions of failure, positive disconfirmation, negative disconfirmation, and satisfaction. Each dimension of these constructs generates three measurement items. The measurement items are mostly selected from prior studies to ensure the content validity. First, we measured the items for the five dimensions of service convenience and user satisfaction that were adapted from the prior literature in marketing literature (Seiders et al. 2007). Second, we developed three constructs of failure in which two of dimensions (information and system failures) were adopted and modified from DeLone and McLean (2003) and Wang (2008). We added one dimension (function failure) and its measurement items. Third, we adapted the measurement items for the two disconfirmation constructs (positive and negative) from Oliver (1980). For all measurement items, we revised the wording in the context of an e-procurement website. For example, the three items for Transaction Convenience are: i) company did not have to exert too much effort to utilize services provided on SePP to complete its
governmental transactions; ii) company found it easy to utilize services on the e-government website to conclude its government transactions; and iii) company was able to accomplish its governmental transactions quickly by utilizing services provided on SePP.

Data Analysis

To test and validate both the measurements and structural properties of our research model, we ran the software of SmartPLS 2.0 which is freely downloadable and installed from the website (http://www.smartpls.de) once we had registered. The software provides Partial Least Squares (PLS) analysis to facilitate the model of formative constructs.

In the test of measurement model, we present internal consistency, inter-construct correlation, and item reliability for determining convergent and discriminant validity (Fornell and Larcker 1981). First, we calculate composite reliability to measure the internal consistency. Composite reliability is the amount of scale score variance that is accounted for by all underlying factors (Brunner and Sub 2005). Second, the Average Variance Extracted (AVE) for each latent construct is computed for demonstrating convergent validity. Average Variance Extracted proposed by Fornell and Larker (1981) is a measure (percentage) of the variance of the constructs that are explained by an individual item. As recommended by Fornell and Larker (1981), each latent construct has composite reliability higher than the 0.70 threshold and AVE higher than the 0.50 threshold (Table 2). In addition, the measurement of item reliability is shown demonstrating mean and factor loading in individual items. To strengthen the result, low loading items are dropped (Table 2).

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean (Std)</th>
<th>Standardized Factor Loading</th>
<th>AVE (&gt;0.50)</th>
<th>Composite Reliability (&gt;0.70)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>All Items</td>
<td>After Dropping Items</td>
<td></td>
</tr>
<tr>
<td>Experienced Accessed Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC1</td>
<td>4.31 (0.51)</td>
<td>0.566243</td>
<td>0.599729</td>
<td></td>
</tr>
<tr>
<td>AC2</td>
<td>3.69 (0.85)</td>
<td>0.891903</td>
<td>0.892273</td>
<td></td>
</tr>
<tr>
<td>AC3</td>
<td>3.31 (1.04)</td>
<td>-0.52026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced Decision Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1</td>
<td>3.98 (0.72)</td>
<td>0.562284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC2</td>
<td>3.71 (0.74)</td>
<td>0.893045</td>
<td>0.972077</td>
<td></td>
</tr>
<tr>
<td>DC3</td>
<td>3.86 (0.84)</td>
<td>0.50323</td>
<td>0.517903</td>
<td></td>
</tr>
<tr>
<td>Experienced Transaction Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC1</td>
<td>3.8 (0.8)</td>
<td>0.268174</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC2</td>
<td>3.94 (0.75)</td>
<td>0.72851</td>
<td>0.749638</td>
<td></td>
</tr>
<tr>
<td>TC3</td>
<td>3.94 (0.72)</td>
<td>0.828626</td>
<td>0.822379</td>
<td></td>
</tr>
<tr>
<td>Experienced Benefit Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC1</td>
<td>3.88 (0.66)</td>
<td>0.515491</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC2</td>
<td>3.9 (0.66)</td>
<td>0.785393</td>
<td>0.800822</td>
<td></td>
</tr>
<tr>
<td>BC3</td>
<td>3.8 (0.82)</td>
<td>0.843278</td>
<td>0.921709</td>
<td></td>
</tr>
<tr>
<td>Experienced Post-Benefit Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC1</td>
<td>3.9 (0.72)</td>
<td>0.843054</td>
<td>0.926711</td>
<td></td>
</tr>
<tr>
<td>PC2</td>
<td>3.84 (0.77)</td>
<td>0.460452</td>
<td>0.529265</td>
<td></td>
</tr>
<tr>
<td>PC3</td>
<td>3.83 (0.66)</td>
<td>0.390227</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced Information Failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF1</td>
<td>2.65 (0.88)</td>
<td>0.61798</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF2</td>
<td>2.98 (1.01)</td>
<td>0.634922</td>
<td>0.630023</td>
<td></td>
</tr>
<tr>
<td>IF3</td>
<td>2.53 (1.04)</td>
<td>0.870178</td>
<td>0.908479</td>
<td></td>
</tr>
<tr>
<td>Experienced System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF1</td>
<td>2.44 (1.05)</td>
<td>0.470581</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Factor Analysis and Reliability Statistics
Third, we also computed the square root of AVE to obtain discriminant validity in which each square root of AVE is greater than its correlation with any of the other constructs. (Table 3) The inter-construct correlation matrix presented shows the comparison by intercorrelations among latent variables and their square root of AVE. This matrix also shows that convergent and discriminant validity holds for each latent construct in which its square root of AVE loads above 0.50.

Table 3: Inter-Construct Correlation Matrix (*Square-root of Average Variance Extracted)

<table>
<thead>
<tr>
<th></th>
<th>AC</th>
<th>DC</th>
<th>TC</th>
<th>BC</th>
<th>PC</th>
<th>IF</th>
<th>SF</th>
<th>FF</th>
<th>PD</th>
<th>ND</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>0.76*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>0.504</td>
<td>0.78*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC</td>
<td>0.271</td>
<td>0.654</td>
<td>0.79*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC</td>
<td>0.298</td>
<td>0.617</td>
<td>0.749</td>
<td>0.86*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>0.153</td>
<td>0.34</td>
<td>0.334</td>
<td>0.170</td>
<td>0.75*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF</td>
<td>0.206</td>
<td>0.117</td>
<td>0.110</td>
<td>0.124</td>
<td>0.110</td>
<td>0.78*</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SF</td>
<td>-0.150</td>
<td>-0.173</td>
<td>-0.168</td>
<td>-0.195</td>
<td>-0.280</td>
<td>0.564</td>
<td>0.84*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FF</td>
<td>0.025</td>
<td>0.252</td>
<td>0.093</td>
<td>0.062</td>
<td>-0.035</td>
<td>0.555</td>
<td>0.598</td>
<td>0.84*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>0.189</td>
<td>0.373</td>
<td>0.393</td>
<td>0.392</td>
<td>0.210</td>
<td>0.002</td>
<td>-0.291</td>
<td>-0.205</td>
<td>0.76*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ND</td>
<td>0.142</td>
<td>-0.026</td>
<td>-0.174</td>
<td>-0.132</td>
<td>-0.133</td>
<td>0.587</td>
<td>0.539</td>
<td>0.461</td>
<td>-0.263</td>
<td>0.73*</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>0.114</td>
<td>0.441</td>
<td>0.541</td>
<td>0.499</td>
<td>0.288</td>
<td>0.009</td>
<td>-0.127</td>
<td>-0.146</td>
<td>0.690</td>
<td>-0.30</td>
<td>0.87*</td>
</tr>
</tbody>
</table>

Figure 2 presents the result. All dimensions of service convenience, except access convenience, show positive effects on positive disconfirmation in which benefit convenience has the most significant impact and post-benefit convenience the lowest. In failure constructs, the influence of information failure on negative disconfirmation is stronger than system and function failures. In relation to e-procurement user satisfaction, the result shows that positive disconfirmation renders a much greater influence than negative disconfirmation.

Overall, there are no hypotheses showing opposite results. Although the hypothesis about the relationship between access convenience and positive disconfirmation is not as significant, it remains a positive relationship. It means that users do not consider access convenience as an important factor in
experiencing SePP services. This may be because most users (vendors) already acquire ease of access while they utilize the services.

![Figure 2. Result of Structure Model Analysis](image)

Although positive disconfirmation (0.656) has a higher coefficient than negative disconfirmation (-0.128) regarding e-procurement user satisfaction, the predictors of positive disconfirmation proposed in the model (access, decision, transaction, benefit, and post-benefit convenience) represent much less of a portion ($R^2 = 0.197$) than the predictors of negative disconfirmation consisting of information, system and function failure ($R^2 = 0.412$).

**Discussion, Implication, Limitation, and Conclusion**

The result of our empirical test of the hypotheses shows several findings. First, the result reveals that SePP users’ experiences with each dimension of service convenience, except access convenience, determine positive disconfirmation. Among all of the dimensions of service convenience, benefit convenience has the highest coefficient of positive disconfirmation. It suggests that SePP users take into account benefit convenience most when they are experiencing the services. It is followed by decision, transaction, and post-benefit convenience respectively in determining positive disconfirmation. These dimensions interact with positive disconfirmation to increase users’ satisfaction. On the other hand, access convenience is found to be not a strong indicator of positive disconfirmation. This result is not consistent with prior studies (e.g., Seiders et al. 2007) examining the relationship between each dimension of service convenience and consumer satisfaction in traditional services. This finding may suggest that vendors have the accessibility and capability of IT infrastructure so that they encounter no problem in reaching and accessing e-procurement services.

Second, information failure has the highest coefficient in fostering negative disconfirmation. It can be noted that the indirect effect of information failure on e-procurement users’ satisfaction is not consistent with the prior study (Theo et al. 2009) finding that information quality is not significantly related to user satisfaction of e-government. Our finding suggests that SePP users actually consider the quality of
information in using these services. All dimensions of failure interact with negative disconfirmation to attenuate SePP users’ satisfaction.

Third, the result reveals that positive disconfirmation strongly influences SePP users’ satisfaction. The coefficient of positive disconfirmation (0.656) is much stronger than that of negative disconfirmation (-0.128) in influencing SePP users’ satisfaction. It means that increasing one unit of positive disconfirmation results in five times the effect on user satisfaction than decreasing one unit of negative disconfirmation. However, the $R^2$ of positive disconfirmation (0.197) is lower than the $R^2$ of negative disconfirmation (0.412). It implies that service convenience dimensions don’t represent major factors in explaining positive disconfirmation while failure dimensions serve as dominant factors in explaining negative disconfirmation. Overall, the model provides a strong gauge ($R^2 = 0.491$) in predicting e-procurement user satisfaction.

Implication for Research and Practice

There is a lack of G2B studies on the demand side, while there are many G2B studies on the supply side. To fill this gap, we research an e-government procurement website in a developing country from the business perspective.

Our research proposes the multidimensional framework of service convenience and performance failure as the key aspects in assessing user satisfaction of an e-government procurement website. The introduction and validation of this theoretical model are our contributions to e-government literature. Although convenience has been used as an assessment factor of the success of e-government (e.g., Mirchandani et al. 2008), it is merely demonstrated as a one-dimensional construct. Other studies also proposed convenience in different contexts such as ease of use, performance, and time (Alshawi and Alalwany 2009). Meanwhile, our study concentrates on a multi-dimensional perspective of service convenience in the context of e-government procurement. This study links service marketing literature to e-government literature. In the literature for e-government research, e-commerce and e-business theories have been applied (e.g., Kumar and Peng 2006; Obeidat and Abu-Shanab 2010; Schubert and Häusler 2001), while this study shows how to apply the service marketing literature by explaining and predicting users’ satisfaction with e-government procurement systems.

The result implies that unsatisfactory experiences with performance failure in the model have been an important aspect in explaining negative disconfirmation. This study adds failure constructs as negative factors in evaluating users’ satisfaction with e-government services through negative disconfirmation. The findings suggest that performance failure, particularly information failure, is very critical to evaluate e-government systems for future research.

In developing countries, governments are still dealing with the early implementation of e-procurement systems that tend to be of low quality (UNCTAD secretariat 2003). With limited resources, these governments are struggling to utilize thier resources in developing and implementing e-procurement systems. Our study adds an in-depth understanding of critical aspects in designing and evaluating e-government procurement systems. By recognizing the demand perspective of vendors, governments can design more convenient websites and plan to prevent and minimize performance failure. Generally, while the use of e-government systems is not compulsory and exposes low awareness in developing countries (Heeks 2006), it is very important to attract potential users. To do so, governments should provide the desired quality of e-government websites addressing service convenience and preventing performance failure. Governments have to manage which critical dimension should be urgently considered when they encounter any service inconvenience and performance failure. As benefit convenience and information failure are the strongest motivators, governments should keep enhancing these dimensions over time.

Limitation and Conclusion

This study has limitations. First, the number of sample obtained is 49. The sample size is quite limited when there are more than a thousand of vendors. Second, the 67.35 percent of vendors who responded the survey is located in Jakarta where the SePP office is. The 59.87 percent of vendors among all vendors that have registered on the e-procurement website are actually located in DKI Jakarta. Thus, this skewed sample size is reasonable. However, further research should be conducted by using a larger sample size.
that covers vendors in various areas. For future study, government agents should be included as users, because vendors and government agents interact with each other through e-procurement websites.

In this study, we investigate what may influence users’ satisfaction with the e-government procurement system (SePP). In this empirical study, we develop the theoretical model by adapting, integrating and modifying salient and relevant frameworks from previous literature (e.g., DeLone and McLean 2003; Oliver 1980; Seiders et al. 2007). Then, we examine the relationships between the five dimensions of service convenience (access, decision, transaction, benefit, and post-benefit) and positive disconfirmation; between the three dimensions of failure (information, system and function) and negative disconfirmation; and between two types of disconfirmation (positive and negative) and e-procurement users’ satisfaction. It can be concluded that users’ experiences of e-government procurement regarding the service convenience (except access convenience) and performance failure strongly influence their satisfaction through two positive and negative disconfirmation constructs.

References


