

The Moderating Effect of Trust between e-Procurement Adoption and e-Marketplace Participation on Firm Performance

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ABSTRACT

This study investigates motivations of firms that have adopted e-procurement to participate in the e-marketplace. In addition, the firm performance after participation in the e-marketplace is measured to investigate the benefits of e-marketplace participation on a firm's performance. Besides, trust is adopted in this study as a moderator between the relation of e-procurement adoption and e-marketplace participation to test whether it will interfere in the relation or not. A two-stage analysis of qualitative approach and quantitative approach is adopted in this study. Case studies of three firms are used to revise the research model. The findings of case studies and data analysis show firms that have adopted e-procurement are more likely to participate in the e-marketplace.

Keywords: e-procurement, e-marketplace, trust

Introduction

This study was motivated by questions concerning the use of e-procurement and e-marketplace in manufacturing industry in Taiwan. In this study, we present a conceptual model to investigate the relation between e-procurement adoption and e-marketplace participation. Therefore, E-procurement and e-marketplace have been a trend nowadays for companies. Based upon the above research background and motivation, the purposes of this study are as follows: (1) to investigate if a firm that has adopted e-procurement will be more likely to participate in the e-marketplace. (2) Since the aim of companies is to save costs or improve their performance, we then investigate the firms' performance to see if there is any performance improvement after participating in the e-marketplace. (3) As uncertainties and risks do exist on the Internet, and thereby we try to understand how trust affects the willingness of companies when considering participating in the e-marketplace.

Literature Review and Research Hypotheses

E-Procurement

Croom (2001) believes that the use of open information systems can provide greater levels of information to buyers, thereby opening up greater competitiveness between providers. E-procurement can be a useful instrument to gain complete information about all products and services provided by buyers and sellers as well. The use of Internet technologies in procurement is aimed at realizing faster and more efficient operational procurement processes which bypass the purchasing department and enable those people to concentrate on more strategic tasks. E-procurement helps to lower transaction costs by making a wide range of information available to buyers and saves precious resources (Reddick, 2004). Based on previous studies, the definition of e-procurement adoption in this study is "the adoption of any technology is designed to facilitate the acquisition of goods by an organization on the Internet." According to the literatures, e-Procurement concern of two topics is deserved to discuss, it include (1) Cost, (2) Process conformance

e-Marketplace

Based on the empirical research by Daniel and Klimis, the prediction of Malone et al. proves true and economic activities are gradually transforming into market setup from hierarchy setup (Daniel & Klimis, 1999). Rask & Kragh (2004) described that an e-marketplace is a market where buyers and suppliers meet to conduct “traditional” business but in a more efficient way than other marketplaces offer and one that allows both parties to save time and money. Internet-based B2B e-markets represent an IOS that facilitates electronic interactions among multiple buyers and sellers (Bakos, 1991; Choudhury, Hartzel & Konsynski, 1998). Thus, based on the work of Skjøtt-Larsen, Kotzab & Grieger (2003), the definition of e-marketplace in this study is “a place on the Internet where many business buyers and suppliers meet, trade and collaborate”.

The business press often reports numerous e-commerce tools that companies use to improve the effectiveness of industrial buyer activities. Description of factors affecting e-marketplace participation as follows, it include (1) Efficiency, (2) Legitimacy, (3) IT Capabilities

Trust

According to Misztal (1996), trust is the fundamental element of a stable relationship, the activator to maintain the partnership, the foundation of each exchange, and even the essential factor of daily interaction. Trust is necessary because trust is the basic element to diminish social uncertainty even if laws and regulations do exist (Gefen, 2000). Probably such concept is also applicable to other electronic transactions (Gefen, Karahanna, & Straub, 2003), and trust should be one core component of e-marketplace as well. Therefore, based on the definition of Mcknight & Chervany (2002) and Ratnasingam (2005), this study defines trust as “the degree that the e-marketplace satisfies the expectation of transaction subjectively presumed by enterprises.” The four variables of trust are as follows, it include (1) Ability, (2) Friendliness, (3) Safety, (4) Predictability

Research Hypotheses Development

The Internet again offers a natural platform to facilitate efficient procurement as numerous buyers and sellers find each other and transact according to some pre-specified protocols (governed by the marketplace or traders’ internal rules) (Johnson & Whang, 2002). E-commerce related activities will concentrate on the usage of e-marketplaces (Essig & Arnold, 2001). The e-marketplaces seek to improve supply chain efficiency by automating business processes such as procurement, order management, and fulfillment (Grey, Olavson & Shi, 2005). Thus the following hypothesis:

H1: There is a positive relation between e-procurement adoption and e-marketplace participation.

Trust operates as a governance mechanism that diminishes opportunism in exchange relations and promotes cooperation (Morgan & Hunt, 1994), and it also encourages open communication and information sharing (Mohr & Spekman, 1994; Doney & Cannon, 1997; Smith & Barclay, 1997; Chang, 2006). Thus, this study takes trust as a moderating factor between e-procurement adoption and e-marketplace participation, and the hypothesis is as follows:

H2: Trust in the e-marketplace has the interference effect on e-procurement adoption and e-marketplace participation.

In an e-marketplace, a partner can participate in any stage of the supply chain, and is able to remove some of the inefficient factors traditionally associated with supply chains. The ultimate goal and main driver for e-marketplace integration are to reduce supply chain management costs. Companies are clearly aware of the possible significant savings when taking their supply chains online, and are generally supportive of the

evolution of the e-marketplace (Murtaza et al., 2004). Strengthened customer relationships, ease of reaching the market, improved efficiency, reduced costs and greater competitive advantage are the accepted key generic benefits of an e-marketplace (Keskinocak et al., 2001). Firms join e-marketplaces unquestionably want to raise its performance, thus the following hypothesis:

H3: E-marketplace participation has a positive influence on a firm's performance.

Case Study

Case Studies Analysis

The study interview three outstanding in business of company as follow:

(1) China Steel Corporation (CSC) is the only integrated steelmaker and slab producer in Taiwan. (2) Einstein Technology Co., Ltd was established in 1991, and was invested by a famous steel company- Tsai See Enterprise Co., Ltd. It has been participated in e-marketplace for 4 years. The main business of Einstein is selling high-end computer technology products, output device, disk array and storage. (3) Yu-Jen-Shin (YJS) Pastry House has been producing festive treats for decades. Its famous product "Crispy Butter Cake" is now one of the "Three Treasures of Da-Jia", together with "Jeng-Lan Temple" and "Da-Jia weaved handcrafts"; Factors Affecting e-Procurement Adoption, It include (1) Cost, (2) Process Conformance; Factors Affecting e-Marketplace Participation, It include (1) Efficiency, (2) Legitimacy, (3) IT Capabilities

Basically, while these three companies all agreed that a company would participate in the e-marketplace only when it had trust in the system and when other business partners had joined the e-marketplace. Because transferring information via the Internet is risky and full of uncertainty, trust is much more important for companies doing business on the Internet. CSC interviewee also mentioned that e-marketplaces should have some mechanisms to induce trust; it includes (1) Ability, (2) Friendliness, (3) Safety, (4) Predictability. Firm Performance after Participating in e-Marketplaces, It include (1) Efficiency, (2) Sales performance, (3) Customer satisfaction, (4) Relationship development

Results of Case Studies

From the result of cast study, H1 and H2 are supported, and H3 is partially supported.

Data Analysis

Data Collection

The data collected from companies that had adopted e-procurement and also had participated in an e-marketplace. Questionnaires were sent to 700 companies including manufacturers and small-to-medium companies. The sample companies were randomly selected from small and medium enterprises and from the top 5000 companies in Taiwan, provided by China Credit Information Service, Ltd. 108 of the questionnaires were returned. The respondents were expected to be from procurement or related departments to ensure that they fully understand the procedures and possible problems. The response rate is 15.43%. Most of the sample companies were established more than 15 years. As for the companies' capitalization, 42% are less than USD\$3,125,000 and 36% are more than USD\$125,000,000, which means the data are mainly composed of big companies and small-to-medium companies. Consequently, the employee numbers of most of the sample companies are less than 1,000; only 22% companies have more than 4,000 employees. More than half of these companies are at the midstream position in their supply chain.

Measurement

The samples of our data are randomly chosen from small and medium enterprises and top 5000 manufacturers in Taiwan. Case studies of three firms were conducted in this study, too. Thus, we can conclude

that the conceptual model of this study has content validity.

Data were analyzed using LISREL 8.52 version. First of all, we ran the confirmative factor analysis. Items with factor loading below 0.45 (Joreskog and Sorbom, 1989) will be deducted. To assess the composite reliability and convergent validity, we have to count the composite reliability (CR) and variance extracted (VE) of factors. For a variable to have composite reliability, the CR value is suggested to be at least more than 0.6 (Bollen, 1989). For a factor to have convergent validity, the VE value is suggested to be at least more than 0.5 (Fornell and Larcker, 1981).

The relation between adopted e-procurement and efficiency has been added. After adding this relation between e-procurement and efficiency, the fitness of the model has been improved. Some studies mentioned this relation. Because industrial purchasers typically have so many available sources to purchase from (i.e. individual part manufacturers, component part manufacturers and the many distributors, representatives, and wholesalers of each), it is important to consider efficiencies that can be gained by the various e-commerce tools. In contrast to effectiveness, efficiency is more evident and has been reported as the first reason for utilizing e-commerce tools such as e-procurement. Efficiency is realized through lower costs (including the opportunity cost of time) in performing various facets of the purchasing task. E-commerce will likely enhance the effectiveness of various procurement tasks (Osmonbekov et al., 2002).

The correlation between factors with the highest factor loading is set to 1; therefore there is no t-value of this relation. The relation between each dimension is significant in statistics.

Discussions and Conclusions

Results of Case Study and Data Analysis

From the results of data analysis that have been discussed, the three hypotheses of this study are all supported; firms that have adopted e-procurement are more likely to participate in an e-marketplace. Since risks and uncertainties exist when transferring information through the Internet, trust will affect a firm's willingness when considering participating in e-marketplaces. After participating in an e-marketplace, firm performance will be improved in four ways, which are efficiency, sales performance, customer satisfaction and relationship development.

Firms have adopted e-procurement are likely to participate in e-marketplaces. From the review of previous studies, most of them focused on the field of e-procurement or e-marketplace alone, the relation between them have not been studied yet. It is noteworthy that the interference effect of trust is not only significant in case firms but supported in data analysis. Trust indeed affects a firm's willingness when considering participating in the e-marketplace. The interference effect is observed in the three case firms. Although they have regular business partners, firms still do business with companies they haven't met before. With regard to those unfamiliar companies, they will become more careful. Additionally, transferring information via the Internet is risky and full of uncertainty, and trust therefore plays an important role in e-commerce. Under such circumstances, trust is very important and the interference effect proves to be significant. Thus, H2 is supported from result of data analysis.

Managerial Implications

The findings of this study suggest that firms adopt e-procurement because they can benefit from cost saving and process conformance. Secondly, in general, the motivation of firms to participate in e-marketplaces is to benefit from it, such as efficiency improvement or cost reduction. The result of this study shows that legitimacy and IT capability are the reasons firms participate in e-marketplaces too. Sometimes organizations participate in

e-marketplaces not because of efficiency but the pressure from its buyers or suppliers. Also, the IT capability is important when considering participating in e-marketplaces. Since e-procurement and e-marketplace are powerful trends for conducting business nowadays, it is necessary for firms to improve their IT capability to be well-adjusted to any innovation of business.

Thirdly, this study shows that the trust of firms on e-marketplaces will affect the willingness of participating. Firms venturing into the e-marketplaces need to be aware of the sources of transaction risks and tailor their market strategy accordingly. Proper mechanisms should be set up to induce trust, especially between business parties that have never transacted with each other before, and to produce a favorable economic outcome. Lastly, the participation of e-marketplaces significantly influenced all four measures of performance. The benefits of e-procurement are cost reduction and process conformance. It improves efficiency, sales performance, customer satisfaction and relationship development. Firms that have not participated in e-marketplaces should begin to evaluate the benefits they can get from e-marketplace participation.

Research Limitation

Some of the questionnaire respondents suggested that the study of this issue should be conducted under limitation of particular industries. The reason is that motivations of adopting e-procurement or participating in e-marketplaces may be different from industry to industry, and the scale of a company will affect the motivation, too. Trust here in this study is a moderating factor that will affect a firm's willingness to participate in an e-marketplace. It is also mentioned that perceived risk of conducting e-commerce will affect a firm's willingness to participate in an e-marketplace, too. Uncertainty, The higher the perceived uncertainty, the greater the perceived risk is. Trust and control mechanisms lower the perceived uncertainty and consequently the perceived risk. In this study, the conceptual model include only trust on e-marketplaces, the risk of joining an e-marketplace is not included. In future study about this theme, risk may be considered as another moderator when participating e-marketplaces.

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