



Adoption of e-procurement and participation of e-marketplace on firm performance: Trust as a moderator

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ABSTRACT

Today, IT has a major influence on commercial activities, accelerating the adoption of e-procurement and e-marketplace participation in many industries. We examined firm motivations for adopting e-procurement for their operations in three-marketplace and measured their performance to assess its benefits. Trust was considered as a moderating variable between the relationship of e-procurement adoption and e-marketplace participation. A two-stage analysis, including both a qualitative and quantitative approach, was applied. Hypotheses were developed and a model constructed. A research questionnaire was developed and distributed followed by data analysis and testing. The results showed that firms that adopted e-procurement were more likely to participate in the e-marketplace and that the firm's performance was enhanced after such participation. Trust was shown to have a moderating effect upon firm willingness to adopt e-procurement when it was considering participation in the e-marketplace.

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1. Introduction

Innovative IT not only enables firms to enhance their overall performance and facilitate inter-organizational relationships and transactions; it also effectively solves the problem of asset specificity and product description. Therefore, future orientation is mainly focused on market rather than hierarchy-based economic activities. At the same time, the Internet has changed the way the firms do business by reshaping of traditional buyer-seller relationship, the improvement of core processes, and in ways to reach new markets. The evolution of information and communication technology has already improved supply chain performance, because of higher process efficiency and integration in B2B e-commerce.

e-Commerce may be divided into three categories: e-procurement led by buyers, e-distribution led by sellers, and e-marketplace led by a third party. The e-marketplace is an online intermediary designed to establish buyer-seller relationships and to facilitate the transactions between them; it generally facilitates trading activities between partners who have not had prior interaction; these are often trilateral, involving buyers, sellers, and an e-marketplace provider [17]. The focus of our study, e-procurement is one important element of the e-marketplace.

In recent years, e-procurement and the e-marketplace have proliferated and been applied in an ever-extending set of domains.

Along with the efficiency, promptness, and ease of use, early adopters have become proficient in web-based procurement systems. The efficiency and automation of internal processes are a prerequisite for process efficiency. Therefore, large enterprises are more likely to possess adequate resources and the ability to construct suitable systems for e-procurement.

An e-marketplace is a place for buyers and suppliers to conduct trade in a more efficient way. More firms are experiencing e-marketplace trading and due to its effectiveness and efficiency, most firms are satisfied with its performance [12]. Therefore, the e-marketplace is increasingly important to the firm's procurement and sales activities.

Trust is, however, an important factor. From the business perspective, lack of personal contact and anonymity create uncertainties that lead to greater perceived risk and privacy concerns. As cyberspace adds a uncertainty and risk to a transaction, the largest concern for buyers and sellers is incomplete and distorted information and inappropriate behavior in this unproved marketplace. However a market that is untrustworthy and characterized by cheating is likely to lead to market failure. Soliman and Janz [16] discovered that with the advent of the Internet, trust significantly influencing the adoption and use of inter-organizational systems (IOSs). Because trust supports collaborative relationships, it is a prerequisite for e-marketplace use.

Our study focused on the issue of e-procurement adoption and e-marketplace participation in the manufacturing industry in Taiwan. We proposed a conceptual model and examine the relation between e-procurement adoption and e-marketplace participation. The importance of trust in e-commerce also deserved

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attention. The absence of physical products and possible long distances between buyers and sellers make trust a critical element in establishing e-commerce relationships. Thus, we considered trust as a moderating factor between e-procurement adoption and e-marketplace participation. Four dimensions of firm performance were adopted to verify the subsequent benefit of participating in the e-marketplace.

The purposes of our study were: (1) to examine whether 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 and improve performance, we examined firm performance after participation in the e-marketplace to determine whether there has been any improvement and (3) since uncertainties and risks exist on the Internet, we tried to determine how trust affected the willingness of companies to participate in the e-marketplace.

2. Literature review

2.1. e-Procurement adoption

Market makers use e-procurement as a means of creating value and establishing relationships with their business partners especially in small and medium-sized enterprises. Traditionally, most organizations spend one-third of their turnover/income on purchasing goods and services. Non-value added activities result in insufficient time for corporate buyers to procure high-value or high-volume materials. Procurement is responsible for identifying customers' needs, translating them into specifications, arranging delivery of goods and services, and assessing customers' satisfaction with goods and services. Another role is in dealing with suppliers, including sourcing, pricing, ordering, delivery, and invoicing. Traditional practices have been plagued by problems, such as inefficient buying, redundant and disconnected processes, and non-strategic sourcing purchases, etc. [11].

Use of e-procurement can speed and reduce the cost of corporate purchasing activities. This purchasing and supply activity of organizations is one which span both internal and B2B services in all organizations (private, governmental, and non-profit). e-Procurement possesses all the functions that exist in traditional manual systems, such as searching for products, checking availability, ordering goods and services, tracking orders, and payment on delivery through the web, but with more value added, such as post-procurement analysis by data mining to predict customers' needs, etc.

e-Procurement technologies are credited with providing significant benefits to the companies who have invested in them [1]. It can be a useful instrument with which to obtain complete information about products and services provided by buyers and sellers, thereby making it more efficient to use IT for procurement activities.

We defined *e-procurement adoption* as the implementation of a technology for searching, quoting, and acquiring goods or resources via the Internet. Its two dimensions are reduced cost and process conformance.

(1) *Cost*: e-Procurement allows consolidation of sources and may prevent maverick buying. Inter-organizational electronic networks are believed to be improving coordination between firms by reducing the costs of searching for appropriate goods and services. Large-scale enterprises with large IT budgets are more likely to be able to construct suitable e-procurement systems from the e-marketplace. Procurement is a high cost activity with unnecessary paperwork, material costs, and errors; typically the cost of per transaction using e-procurement is reduced by 65% of the older manual procurement transaction; labor costs also fall. The conversion from paper-

based ordering, invoicing, and tracking into electronic documents can reduce all costs related to procurement, such as accounting and record keeping. Indeed, the objective of e-procurement is not to lower suppliers' prices or margins but to achieve savings in procurement and administration.

(2) *Process conformance*: Most e-commerce sites now provide interfaces for procurement, such as online ordering. As the need for integrating activities and information flow increases; optimizing the process has become a prerequisite for success in all firms [2]. The most obvious stems from the elimination of redundant or unnecessary processes, improved resource allocation and system-wide standardization.

2.2. e-Marketplace participation

New technology allows producers to contact end-users directly and helps electronic intermediary service providers, to exploit IT by linking sellers and buyers [4]. The Internet allows business processes to be consistent with the growing demand for increased speed and efficiency at lower cost. The e-marketplace can be regarded as an organizational platform that allows participants to exchange information about prices and offerings. Based on the concept of an e-hub, Albrecht et al. stated that the B2B e-marketplace can be seen as a space where *buyers* can find new products and services and *sellers* can identify new market opportunities and seek out new customers, thereby lowering transaction costs for both. The role of the e-marketplace is in matching buyers and sellers.

Some factors affecting e-marketplace participation are:

- (1) *Efficiency* due to cost and time savings [3]. It has been suggested that the e-marketplaces may give suppliers access to higher levels of decision-making authority in buying organizations.
- (2) *Legitimacy* because organizations must justify their actions and perform according to societal norms and institutional expectation. Generally these relate to perceived repercussions due to non-participation. Other reasons include the desire to appear technologically developed by mimicking the behavior of other firms. Non-participation can also result in isolation and the ultimate loss of trade opportunities with business partners.
- (3) *IT capabilities* are needed; firms require a good infrastructure in order to obtain benefit from marketplace participation. Building sustainable competitive advantage while enhancing the firm's e-market participation is not easy or cheap [9]. However, lack of participation may result in a firm becoming isolated.

2.3. Trust

Quigley, Tesluk, Locke, and Bartol [10] defined trust as a belief that firm makes an effort to fulfill commitments, is honest, and does not seek to take unfair advantage of opportunities. Richard, Thirkell, and Huff [14] pointed out that trust has been conceptualized as a willingness to rely on exchange partners in whom one has confidence of their reliability and integrity. Son et al. indicated that the reliability and integrity of a trustworthy partner are frequently associated with competency, helpfulness, benevolence, fairness, responsibility, consistency, and honesty. Trust not only facilitates loyalty through reducing perception of risk, but also through enhancing customer perceived value in a relationship built through frequent, positive two-way communication.

Trust has a moderating effect on process and behavior [6]. It facilitates business transactions between two parties in an impersonal economic environment in which the parties lack prior experience on mutual confidence. B2B e-marketplace providers must also establish trust; they will fail if participants do not trust them. McKnight and Chervany proposed four components of trust in the B2B relationship: competency, benevolence, integrity, and

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