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# **Antecedents of Suppliers' Participation in Business-to-Government (B2G) Electronic Auction Markets: Thai B2G E-Auction**

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## **ABSTRACT**

Despite business-to-government (B2G) electronic auction (e-auction) markets being a way for suppliers to create opportunities for market expansion and for trading activities, the effort to understand the behaviour of suppliers participating in these markets has been lacking. Low supplier participation has been a major problem in Thai e-auction markets. In this paper, we propose a framework to explain suppliers' intention to participate, and the level of participation in B2G e-auction markets. We posit that suppliers' participation depends on organizational motivation, and their capabilities. The conceptual framework draws from the Motivation-Ability Framework, Transaction Cost Theory, Institutional Theory, and Resource-Based Theory. It proposes that three key constructs - efficiency motive, legitimacy motive, and organizational capabilities influence suppliers' intention to participate as well as their participation level in B2G e-auction markets. The conceptual framework may be useful to better understand the key reasons for suppliers to participate in B2G e-auction markets. We also provide rationale for each of the

proposed constructs by drawing on our understanding of the Thai electronic auction market as well as the existing literature.

Keywords: Electronic auction market, B2G, Suppliers / sellers, buyers

## **1 INTRODUCTION**

In the early 1990s, the emergence of electronic markets provided opportunity to utilize electronic commerce to achieve the objectives of businesses as well as government services. Business-to-Government (B2G)<sup>1</sup> electronic markets can be considered as an inter-organisational information system with which participating buyers and sellers utilize electronic markets for exchange information related to price, product specification, and terms of the trade, and a dynamic price-making mechanism (such as electronic auctions) (Bakos 1991; Grewal, Comer and Mehta 2001). Electronic auction (e-auction) markets are increasingly being used in B2G electronic markets to procure goods and services for governments, they have been reported to yield significant price reductions and time saving for governments as well as to create opportunity for suppliers to penetrate new markets (Beall et al. 2003; Dalpe 1994; Emiliani and Stec 2001; Emiliani and Stec 2002; Smeltzer and Carr 2003).

The majority of research on e-auction markets are focused on developed countries (Germer, Carter and Kaufmann 2004). There is very little empirical evidence on how B2G e-auction markets perform in the context of developing countries. Developing countries generally lack resources (e.g. skilled people, proper ICT infrastructure) and they also generally report slow economic progress (Jones 2007), compared with developed countries. These are example barriers to the development and support for B2G e-auction markets. The literature also reports the need for transparency in e-government procurement, especially in developing countries (Fenster 2003; Rege 2001). Equity is generally promoted for developing countries (UN 2005). B2G e-markets can result in more equity in supplier participation (MacManus 2002) and therefore allow new suppliers to enter the marketplace using a competitive bidding process. For all the above reasons,

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<sup>1</sup> Business-to-Government is defined as "business activity that involves a business selling its products or services to the central, regional or local government" (source: <http://business.govt.nz>).

this study which will be conducted in a developing country is particularly interesting. It will therefore increase our understanding of how B2G e-market will assist the Thai government in promoting the level of suppliers' participation.

B2G e-auction markets generally involve three groups – government procuring agency, supplier, and third-party provider of electronic auction services – which have distinctive roles in the markets (Möllenberg 2004; Stockdale and Standing 2004) (See Figure 1). Consequently, B2G e-auction markets can be considered as a market institution, with an explicit set of rules issued by government related to resource allocation and prices, which relies on electronically submitted bids from market participants. Prior studies suggest that a sufficient number of qualified suppliers participating in B2G e-auction markets can lead to a competitive market environment (Beall et al. 2003; Elmaghraby 2005; Jap 2007; Smeltzer and Carr 2003). Thus, the number of qualified suppliers plays a significant role for the success of e-auction markets. However, the effort to understand the behaviour of suppliers participating in B2G e-auction markets has been lacking. Prior research in this area has two main foci, both in terms of the type of electronic marketplaces (i.e. B2B electronic marketplaces) (Son and Benbasat 2007) as well as the research approach (i.e. qualitative case studies). Qualitative case studies provide a rich picture of specific phenomenon within the chosen context (e.g. (Hackney, Jones and Lösch 2007; Soh, Markus and Goh 2006; White et al. 2007)). However, the results do not allow us to generalize to other settings and they also do not allow us to quantitatively validate relationships between key constructs.

From a thorough review of the relevant literature, this study proposes a research framework with an objective to extend our understanding of the antecedents of suppliers participating in B2G e-auction markets by drawing from the relevant literature including these four theories: the Motivation-Ability Framework, Transaction Costs theory, Institution Theory, and Resource-Based Theory. The studies of B2G e-auction markets have been relatively rare so there is still a lack of a good understanding of how B2G e-auction markets work, especially from the suppliers' perspective.

This study employs the Thai B2G e-auction markets to test the proposed hypotheses. Thai B2G e-auction markets have a number of characteristics that make them suitable for examining the proposed research framework. Firstly, the study of B2G e-auction markets have become significantly important for the procurement of goods and services in South East Asian countries including Thailand (Jones 2007; Settoon and Wyld 2003). The Thai government shows commitment in trying to promote the B2G e-auction markets by making it mandatory for all Thai government agencies to procure goods and services through e-auction markets, whenever the procurement value is more than 2 million Baht (US\$ 60,000). Secondly, the National Statistical Organization (NSO) of Thailand reported that the participation of suppliers in Thai B2G electronic markets is low. Only 0.3% of businesses participate in B2G e-markets compared to 85.3% in business-to-consumer (B2C) and 14.4% in business-to-business (B2B) electronic commerce (NSO 2007). Thirdly, first author has full access to the Thai e-auction markets which makes this study possible.

This study contributes to the literature in the following ways: Firstly, this study explicitly focuses on the linkage between B2G e-auction markets and supplier participation behaviour, which has not been done before. Secondly, this study conceptualizes supplier participation behaviour within the Motivation-Ability Framework, Transaction Costs Theory, Institutional Theory, and Resource-Based Theory, to extend our understanding of supplier behaviors in the B2G e-auction markets. Lastly, this study fills the gap in the literature arising from a lack of research in the B2G e-auction markets environment.

## **2 LITERATURE REVIEW**

This literature review is taken from diverse disciplines; marketing, economics, organization management, and information systems. We first introduce the electronic auction mechanism, then summarise four key theories important for this study, followed by a description of the Thai e-auction context, before stating the main research questions.

### **2.1 Electronic Auction**

Electronic auction (e-auction) is defined as a market institution with an explicit set of rules determining resource allocation and prices on the basis of electronically submitted bids from

market participants (Beall et al. 2003; McAfee and McMillan 1987). The term “auction” is used to represent both selling auctions (bidding to buy) and purchasing auctions (offering to sell) (Kaufmann and Carter 2004). The literature in e-auctions are usually discussed in terms of selling auctions, rather than purchasing auction, for reason of simplification (Kaufmann and Carter 2004). The four basic selling auction types were introduced by McAfee and McMillan (1987); The English auction (ascending-bid auction), the Dutch (descending-bid auction), the first-price sealed-bid auction, and the second-price sealed-bid (Vickrey) auction. In the same way, Kaufmann and Carter (2004) suggested that the four selling auction types have mirror images in the context of purchasing auction; electronic reverse auction (ascending-bid auction), the reverse Dutch auction (descending-bid auction), the first-price sealed-bid purchasing auction, and the second-price sealed-bid purchasing auction. In this context, **e-auction** refers to the electronic competitive bidding between suppliers that drives prices down or purchasing auctions from buyers.

## **2.2 B2G Electronic Auction Markets**

This paper is confined to the context of a B2G e-auction market as it pertains to a situation with one buyer (government) and a group of sellers (Kaufmann and Carter 2004). In B2G e-auction markets, a government procuring agency invites pre-qualified suppliers who compete against each other to supply a specified good or service, thus driving down the price. Governments find the e-auction process attractive because of the tangible benefit of price reductions and the prospect of a reduced transaction cost (Beall et al. 2003; Hackney, Jones and Lösch 2007; Settoon and Wyld 2003). Similarly, suppliers can obtain benefits from opportunities to bid electronically for new business, to penetrate new markets (Smeltzer and Carr 2003), to create new low costs sales channel, and to lower overall transaction costs with buyers in e-auction markets (Smart and Harrison 2003). Furthermore, potential benefits to suppliers may include lower marketing and distribution costs and time reduced between bidding and winning the business (Smeltzer and Carr 2003). Sometimes the result of winning the business is announced at the end of the event, or a day or two later versus weeks or months under traditional auction processes.

Figure 1 (adapted from (Möllenberg 2004)) shows the tripolar structure of B2G e-auction markets. Third-party providers of e-auction services refer to market intermediaries, which facilitate market transactions between buyers and sellers to achieve economies of scale or scope and to reduce operating costs (Bailey and Bakos 1997). A government procuring agency refers to a buyer who procures products and services through e-auction market provided by third-party providers of e-auction services. Supplier refers to a bidder who participates to bid products or services of the government through electronic auction market provided by third-party providers of e-auction services.

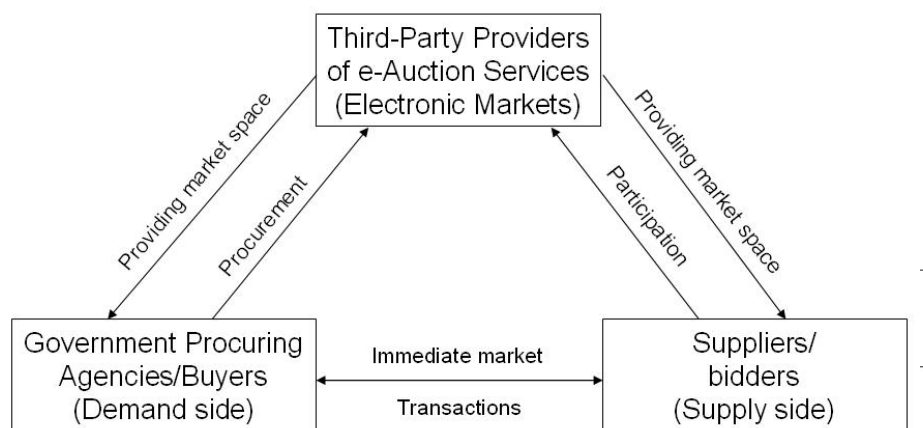


Figure 1: The tripolar structure of B2G e-auction markets composing of three main groups. (adapted from Möllenberg, 2004)

### 2.3 Transaction Cost Theory

According to transaction cost economics (TCE), all economic activity revolves around a transaction, which is simply some form of exchange of a good or service between two or more economic actors. To optimize the exchange, an appropriate governance structures must be matched to the nature of the transaction (Williamson 1999). The choice of transaction depends on a number of factors, including asset specificity, uncertainty, and frequency in describing the transaction (Williamson 1981). Then, transactions may be divided into production and coordination costs (Malone, Yates and Benjamin 1987). Coase (1937) proposed that the use of price mechanisms generates cost such as searching for prices, reaching an agreement and enforcing the commitments. In this research, transaction costs represent coordination costs. If transaction costs are high, no or little economic activity is likely to occur. There are three general

forms of governance structures within TCE. There are market based governance structures that rely on a contractual relationship with an external partner. On the other hand, hierarchy based governance structures encompass the internal production of goods or services, relying on a system of organisational relationships. Hybrid based governance structures, such as partnership, joint ventures, and franchises exist. Transaction cost concepts have been deployed in information systems to analyse the impact of information technology on the organization of economic activity in markets and hierarchies (Malone, Yates and Benjamin 1987). Bakos (1991) pointed out that information technology would reduce transaction costs, thereby enabling the emergence of more efficiently organized electronic markets. Suppliers will choose governance structures of transaction that economize on perceived transaction costs (Wigand 1997).

#### **2.4 Institutional Theory**

The institutional approach has been used to study organization; institutional environments are important for organizational structure and action (Son and Benbasat 2007; Teo, Wei and Benbasat 2003). The key idea behind institutionalization is that organizational action reflects a pattern of doing things that evolves over time and becomes legitimated within organization and an environment (Eisenhardt 1988). DiMaggio and Powell (1983) suggested three types of isomorphic pressures - mimetic, coercive, and normative – that cause an organization to have the same form with their environment (e.g. competitors or government/buyer). Mimetic pressures may cause an organization to imitate the actions of other structurally equivalent, whereas coercive and normative pressures operate through interconnected relations (DiMaggio and Powell 1983).

#### **2.5 Resource-Based Theory**

The resource based view (RVB) of the firm suggests that organisations compete and create value on the basis of resources that are unique, rare, valuable, and not easily imitable or substitutable (Barney 1991; Conner 1991). Competencies develop when such resources are combine to create specific organizational ability (Teece, Pisano and Shuen 1997). Mahoney et al. (1992) suggested three main research perspective in resource-based theory: 1) a firm's distinctive competencies and heterogeneous capabilities, 2) fitting the resource-based view within the organisational economics paradigm, and 3) its complementary view to industry organisation research. Peteraf



(1993) also proposed a resource-based model of the theoretical conditions which underlie competitive advantage, namely resource heterogeneity, ex post limits to competition, imperfect resource mobility, and ex ante limits to competition. Hall (1993) suggested the sources of sustainable competitive advantage as being two types of capability differential; namely, capabilities based on assets and capabilities based on competencies.

## **2.6 Thai B2G Electronic Auction Markets**

The Thai B2G e-auction markets can create an opportunity for suppliers to sell goods or services to government. Suppliers not currently transacting through the Thai B2G e-auction markets, can expand their existing markets using this electronic channel in order to increase their market penetration level and to decrease transaction costs (Geyskens, Gielens and Dekimpe 2002). B2G e-auction markets in Thailand are highly decentralized. There is no central procuring authority or control agency, there is no purchasing department or the associated purchasing staff (McCue and Pitzer 2000). Each of the Thai government agencies can procure the goods, services through e-auction markets provided by third-party providers of e-auctions. However, the Prime Minister's Office (PMO), by cabinet approval, has authority to issue and update regulations that stipulate procurement procedures and standardized contracts. All government agencies in central administration and provincial administration must comply with these regulations. Local administration and state enterprises, although not under the direct control of the central government must also comply with cabinet procurement policies. Given the authority of the different government administration units in mandating the strict electronic procurement practices of the Thai government, it leaves suppliers no choice but to comply with the set rules and regulations if they wish to expand their business to the government sectors.

Thai e-auction markets were introduced by the Thai government in 2002. The Thai cabinet, however, has agreed to enforce all government procuring agencies and public enterprise to deploy transaction through e-auction markets. Figure 2 shows the e-auction process from the suppliers' perspective. Starting with The Comptroller General's Department (CGD), which is a division in the Ministry of Finance of Thailand, initiates the process by advertising the item to be purchased on the government website ([www.eprocurement.go.th](http://www.eprocurement.go.th)), and also at the government procuring agencies and in the newspaper or on the radio, generally in Thai language. Suppliers

are then invited to participate by third-party providers of electronic auction. Next, interested supplier firms purchase details of specifications of the item from the government procuring agency at a cost of US\$10. If the suppliers' qualifications meet the government requirements as issued by the Ministry of Finance, and the numbers of qualified suppliers who may be invited to be bidders are more than three, qualified suppliers are registered to be bidders in the B2G e-auction market. After these qualified suppliers have been trained (e.g. in the use of the e-auction system) by third-party providers of e-auction services, suppliers will prepare to bid on the specified date, place, and time of auction. The first-price sealed-bid purchasing auction has been used for the Thai government to procure goods and services ([www.eprocurement.go.th](http://www.eprocurement.go.th)). On the day of the auction, bids are executed through an e-auction market provided by third-party providers of e-auctions, and the item is awarded to the lowest bidder.

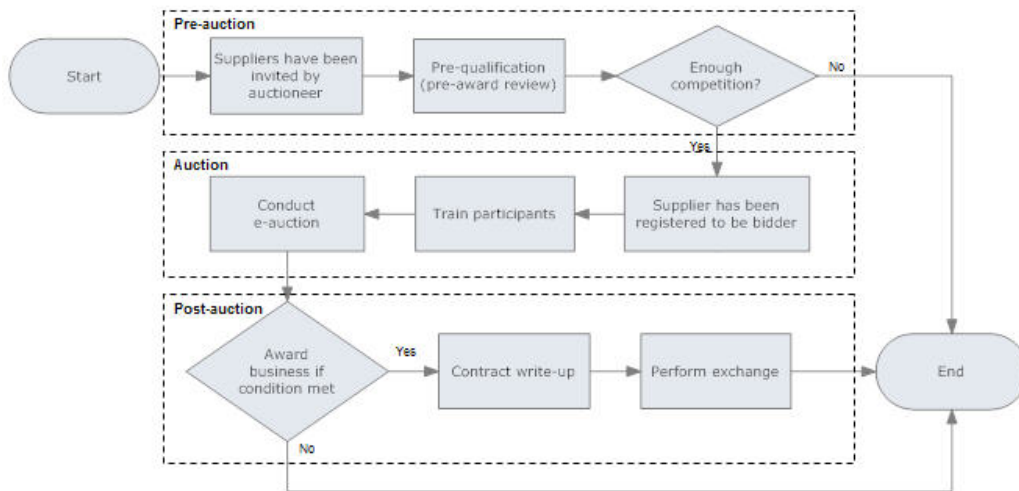


Figure 2: Electronic auction process flow from supplier's perspective (adapted from (Kumar and Chang 2007))

The Thai government procuring agencies in B2G e-auction markets face a major problem pertaining to too few suppliers participating in these markets that could result in a noncompetitive electronic auction environment (NSO 2007). Smeltzer & Carr (2003) have suggested that at least four or five suppliers are needed to begin the bid process. Whereas, Elmaghraby (2005) argues that more bidders is not always better. Notwithstanding, it is important to understand the suppliers' behaviour to participate in the Thai B2G e-auction markets in order to facilitate these markets' success and to make these markets more

competitive. Thus, the aims of this research are 1) to investigate the factors that influence suppliers' intention to participate and the level of participation in the Thai B2G e-auction markets and 2) to examine differential effect of the three groups of factors in participation intention and participation level. The main research questions to be addressed are;

1. What types of precursor factors motivate suppliers' intention to participate, and to increase their level of participation in B2G e-auction markets?
2. Do these key factors play different roles in explaining suppliers' intention to participate and participation level?

### **3 FRAMEWORK DEVELOPMENT**

In this section, we describe the theoretical development of a framework for explaining the factors that influence suppliers' participation in B2G e-auction markets. We propose that three main constructs: efficiency motive, legitimacy motive, and supplier capabilities - influence suppliers' participation (dependent variable) in B2G e-auction markets. These variables are explained below.

#### **3.1 Supplier Participation**

In e-auction markets, suppliers' participation can be classified into two groups; transaction intention and participation level.

##### **3.1.1 Transaction Intention**

In the technology acceptance model and e-commerce literature, transaction intention is likely to influence future transaction behavior (David 1989; Son and Benbasat 2007; Teo, Wei and Benbasat 2003). Behavioral intention refer to the motivational factors that reflect how people are willing to try to undertake a behavior (Ajzen 1991). In transaction intention period, suppliers will face higher levels of uncertainty related to evaluating the pros and cons of doing business through the B2G electronic auction market (Son and Benbasat 2007).

##### **3.1.2 Participation Level**

To deal with the varying levels of supplier activities in B2G e-auction market, the participation level can be classified into the exploration stage, the trial stage, the commitment stage, and passive stage (Grewal, Comer and Mehta 2001; Son and Benbasat 2007). In the **exploration**

**stage**, the supplier has been registered in the B2G e-auction market but has not yet begun to conduct trading activities through the e-auction market. In the **trial stage**, it has conducted several transactions through a B2G e-auction market, but it is still evaluating the pros and cons of this means of doing business. In the **commitment stage**, the supplier has made a full commitment because trading through a B2G e-auction market has become an important part of its operations. In the **passive stage**, the supplier has considered not doing business or terminated conducting business in the B2G e-auction market.

### **3.2 Efficiency Motive**

Organisations participating in e-commerce would be more tended to obtain both efficiency and effectiveness benefits (Bakos 1991; Chang, Jackson and Grover 2003). An e-market can reduce coordination costs, which include setting up a relationship, search costs, and transaction costs, between the buyers and the sellers (Bakos 1991). We draw from the transaction cost theory to study the economic organization of how suppliers seek to minimize transaction costs (Williamson 1981). There are three dimensions that are employed to characterize any transaction. They are asset specificity, uncertainty and complexity (Williamson 1981). Arguments for the move to e-markets were based on expected reduction in the transaction costs between buyers and sellers (Bakos 1991; Williamson 1981; Williamson 1999). Malone et al. (1987) proposed that information technology, by reducing the transaction costs of market-based coordination, will lead to increased use of market-based governance structures (such as B2G) than hierarchy-based governance structures (such as EDI). An organization would choose one of these structures that best fits its economic efficiency rationale. Malone et al. (1987) provide two characteristics of products (i.e. asset specificity and product description complexity) which can influence an organisation to select one of governance structures between electronic markets and electronic hierarchies that minimize their total cost.

#### **3.2.1 Product Characteristics**

Hackney et al. (2007) suggest that not all products are equally suitable for procuring through e-auction markets. Hur et al. (2007) also support this assertion and further suggest that not all products are auction-suitable and the commodities are suitable for e-auction markets. The type of products directly impact on its specificity (Hackney, Jones and Lösch 2007) and product

description complexity (Malone, Yates and Benjamin 1987). Malone et al. (1987) proposed two characteristics of products (i.e. asset specificity and product description complexity) that influence suppliers to participate in a B2G electronic auction market. **Asset specificity** is the extent to which specialized investments are needed to support an exchange (Williamson 1981) or cannot be easily utilized by other firms (Malone, Yates and Benjamin 1987). If products in the e-auction market have high asset specificity, suppliers tend to not participate in this market. **Product description complexity** refers to the amount of information necessary to describe the attributes of a product (Malone, Yates and Benjamin 1987; Son and Benbasat 2007). If complex products are difficult to translate into unambiguous product description, suppliers tend to not participate in a B2G e-auction market.

Proposition 1: Product characteristics in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 1a: Asset specificity of product in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 1b: Description complexity of product in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

### 3.2.2 Environmental Uncertainty

Organizational theories have suggested that organizations must adapt their environment to remain viable in business (Duncan 1972). The literature on the relationship between organization and environment shows the link between these two variables. For example, Karimi, et al. (2004) show that managerial decision-making tasks are affected by rapid changes that occur in organizational task environments and that when confronted with environmental uncertainty. Brouthers, Brouthers and Werner (2002) found that understanding perceived environmental uncertainty is important in gaining a better understanding of strategic behaviour in different industries. Lee and Clark (1997) also claimed that environmental uncertainty is inherent in electronic markets. The literature has identified many different environment dimensions, three factors are viewed as particularly important (Achrol and Stern 1988; Brouthers, Brouthers and

Werner 2002; Kabadayi, Eyuboglu and Thomas 2007; Karimi, Somers and Gupta 2004; Miller and Friesen 1983; Newkirk and Lederer 2006) and have been included in a majority of e-commerce studies. These three factors are dynamism, complexity, and hostility. It is also consistent with Duncan's work (Duncan 1972), which identifies dynamism and complexity as major sources of environmental uncertainty. **Dynamism** refers to the rate and unpredictability of environmental change. It is especially challenging suppliers who need to participate in B2G e-auction markets. Researchers have measured it in terms of frequency of environmental change and unpredictability of market factors (Homburg, Workman and Krohmer 1999; Kabadayi, Eyuboglu and Thomas 2007). **Complexity** refers to the number and diversity of competitors, suppliers, buyers, and other environmental actors that firm decision makers need to consider in formulating their strategies (Duncan 1972; Kabadayi, Eyuboglu and Thomas 2007). **Hostility** represents the availability of resources and the degree of competition (Miller and Friesen 1983; Newkirk and Lederer 2006) in electronic auction markets. Hostility can be measured in terms of the threats to the supplier's firm posed by labor and material scarcity, intense competition in price, and product differentiation (Karimi, Somers and Gupta 2004; Miller and Friesen 1983; Newkirk and Lederer 2006). In a hostile environment, there may be a scarcer resources, lower profit margins and less manoeuvrability (Miller and Friesen 1983) to the suppliers' firms for participating in B2G e-auction markets (compared to a less hostile environment).

Proposition 2: Environmental uncertainty in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 2a: Environmental dynamism in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 2b: Environmental complexity in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 2c: Environmental hostility in a B2G e-auction market will negatively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

### 3.3 Legitimacy Motive

Much of institutional literature emphasizes that organisational structures and processes tend to become isomorphic with the accepted norms for organisations of particular types (DiMaggio and Powell 1983). Isomorphism is often used as a mechanism for reducing uncertainty by organizations by adopting new innovations (DiMaggio and Powell 1983). For example, Son and Benbasat (2007) studied how legitimacy-oriented factors, which are mimetic pressures, coercive pressure, and normative pressures, influence organisational buyers' adoption and use of B2B e-marketplaces. They found that two isomorphic processes; mimetic and normative pressures have significant effects on adoption intent, but not on participation level. While, coercive pressures did not significantly explain either adoption intent or the level of participation.

#### 3.3.1 Mimetic Pressures

As with Teo et al. (2003), we focus on the two specific types of mimetic pressure: participation among competitors and perceived success of participated competitors. **Participation among competitors** refers to the participation level of competitors participating in B2G e-auction market. Whereas, **perceived success of participated competitors** refer to suppliers often closely monitoring their competitor to identify successful practices and imitate their actions to achieve similar benefits.

Proposition 3 Mimetic pressures in a B2G e-auction market will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 3a: Participation level of competitors in a B2G e-auction market will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 3b: Perceived success of competitors in a B2G e-auction market will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

#### 3.3.2 Coercive Pressures

Coercive pressures is defined by DiMaggio and Powell (1983, p. 150) as "both formal and informal pressures exerted on organizations by other organizations upon which they are

dependent and by cultural expectations in the society within which organization function". These pressures may take several forms, such as force, threats, persuasion, and invitation (DiMaggio and Powell 1983). For example, the government is one of the largest customers of the supplier, and the supplier's well being may very depend on whether it is being awarded the contract from the government. Thus, the purchasing volume from government can dominate supplier's firm need to participate in B2G e-auction markets. We propose the effect of the perceived dominance of government procuring agencies on the suppliers' intention to participate and the level of participation in B2G e-auction markets.

Proposition 4: Coercive pressures in a B2G e-auction market will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 4a: Perceived dominance of government's purchasing volume will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

### **3.3.3 Normative Pressures**

Normative pressures implies that strategic processes taken by organisations are subject to the values and norms shared among members of their social network (DiMaggio and Powell 1983). Normative pressures from participation in professional and trade associations may promote transactions through a B2G e-auction market.

Proposition 5: Normative pressures in a B2G electronic auction market will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 5a: Participation in professional and trade associations will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

### **3.4 Supplier Capabilities**

This construct is mainly drawn from resources-based view theory (RBV). In the strategic management literature, there is growing evidence that competitive advantage often depends on the firm's deployment of capabilities (Barney 1991; Day 1994; Wade and Hulland 2004). Thus,



firm's capabilities enable a firm to compete more effectively in the marketplace (Jap 2001). Organizations have sustainable competitive advantage when they consistently produce products and/or delivery systems with attributes which correspond to the key buying criteria for the majority of the customers in their targeted market. These attribute may include factors such as price, specification, reliability, etc (Hall 1993). Coyne (1986) suggests that not only do the product and/or delivery system attributes need to be important to customers, a capability differential need to be significant for enduring sustainability. Suppliers with greater efficiency can develop sustainable competitive advantage by using this capability to reduce costs and develop a cost leadership position in their industry (Burney 1991; Porter 1985). Hall (1993) suggests that two types of supplier capabilities – capabilities based on assets and capabilities based on competencies - could influence supplier to gain competitive advantage in markets.

### 3.4.1 Capabilities based on Assets

We propose two sub-constructs that can influence suppliers to participate in B2G e-auction markets. Economies of scale and excess production capacity would be used as sources for suppliers' competitive advantage in B2G e-auction markets (Elmaghraby 2005). **Economies of scale** refer to the asset whereby long-run average total cost of suppliers falls as the quantity of output increases (Mankiw 2006). Suppliers can produce goods at low cost only if they produce in large quantities. For example, the government provides a large purchasing volume through a B2G e-auction markets which induces a supplier, who has economies of scales (i.e. cost for producing a second unit is less than cost for producing the first unit), to supply goods or services at a small cost than its competitors. Supplier can take advantage of economies of scale in competing with their competitors in B2G e-auction markets. **Excess production capacity** infers supplier may differ in its production capacity. Excess production capability can be used to supply products and services as supplier's competitive advantage (Elmaghraby 2005). If excess product capacity exists in the supply base, supplier can allocate this valuable resource in an e-auction markets (Jap 2002). For instance, when supplier's excessive capacity exists, supplier tend to participate in a B2G e-auction market.

Proposition 6: Capabilities based on assets of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 6a: Economies of scale of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 6b: Excess product capacity of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

### 3.4.2 Capabilities based on Competencies

Hall (1993) proposed two types of capabilities based on competencies which can be the sources of sustainable competitive advantage, namely, functional capability (i.e. top management's IT self-efficacy) and cultural capability (i.e. total quality management). In the context of B2G e-auction markets, **top management's IT self-efficacy** refers to the perceptions of the owner and/or CEO of supplier to use IT in the accomplishment of a task (Bandura 1986; Compeau and Higgins 1995). This definition is based on the concept of self-efficacy defined by Bandura (1986) as "people's judgments of their capabilities to organise and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses (p.391)". For example, top management can use his/her ability to manipulate electronic auction system provided by third-party providers of e-auctions. Hulland et al. (2007) also found that the organisation which had a strong IT skill capability was positively influenced to commit to the online channel. **Total quality management (TQM)** refers to the continuous improvement of work processes to enhance the organisation's ability to deliver high-quality product or services in a cost-effective manner (Beer 2003). Supplier's firms that implement TQM are better positioned to gain through lowered costs and improved customers' satisfaction (Beer 2003). In addition, Powell (1995) found that TQM can produce economic value; and it can also be used as a potential source of sustainable competitive advantage for suppliers' firm. Thus, we expect that TQM can be used as a source of competitive for suppliers in B2G e-auction markets.

Proposition 7: Capabilities based on competencies of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 7a: Top management's computer self-efficacy of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Proposition 7b: Total quality management of supplier will positively influence supplier's intention to participate and the level of participation in the B2G e-auction market.

Figure 3 shows the proposed research framework for B2G e-auction markets.

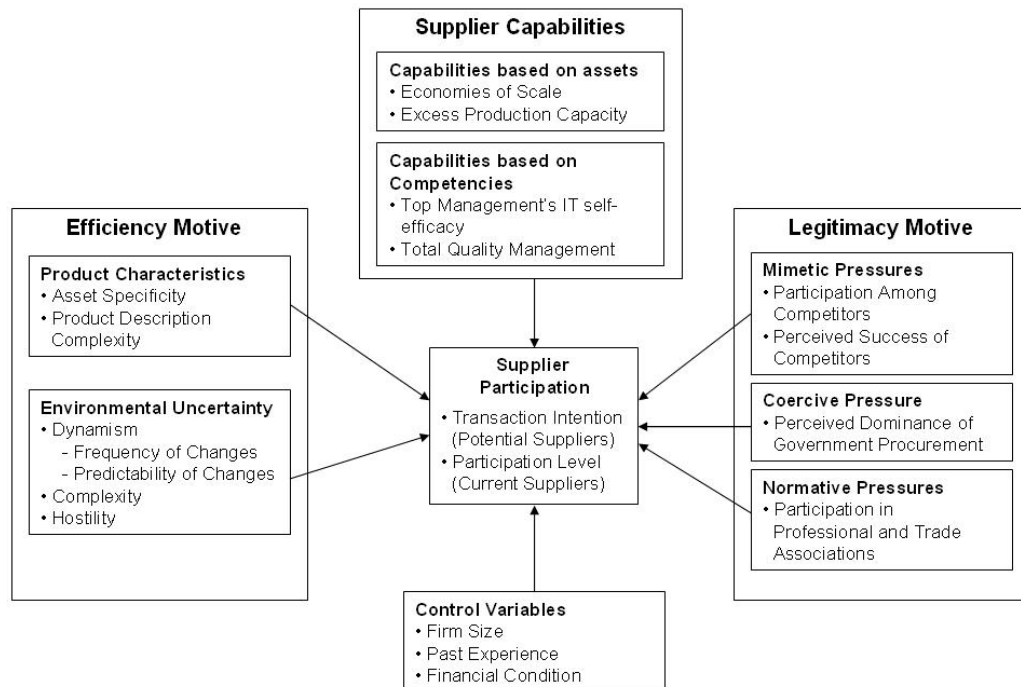


Figure 3: Research Framework for B2G E-Auction Markets

#### 4 INITIAL INDICATIONS OF EMPIRICAL SUPPORT FROM LITERATURE

In this section, we summarise for each of the constructs used in the proposed framework, their source(s) and the corresponding rationale for its inclusion, as derived from the empirical literature. .

Proposed Constructs	References	Rationale for Support of Construct in the Propose Model
<b>Supplier Participation</b>		
- Transaction Intention	Grewal et al. 2001; Son and Benbasat 2007	A potential supplier tends to participate in B2G e-auction market based on evaluating its expected efficiency benefits from participation, organizational isomorphism, and its current capabilities to compete in this electronic auction market (DiMaggio and Powell 1983).
- Participation level	Grewal et al. 2001; Son and Benbasat 2008	A level of supplier participation depends on its evaluating the pros and cons of doing business through a B2G e-auction market. The supplier chooses one of four stages that best described its transaction in a B2G e-auction market.
<b>Environmental Uncertainty</b>		
- Dynamism: Frequency of Changes	Kumar et al. 1992, Kabadayi 2007	A supplier faces the frequency of environmental change and unpredictability of market factors (Homburg 1999). The supplier needs to respond to fast changing in terms of frequency of changes in products, pricing behavior, and government's preferences.
- Dynamism: Predictability of Changes	Kumar et al. 1992, Kabadayi 2008	A supplier finds that supplier needs to respond to fast changing in terms of predictability of changes. Supplier tends to predict the situation of changes in e-auction markets to avoid unstable situations which affect its business.

- Complexity	Kumar et al. 1992, Kabadayi 2007	A supplier finds that the number and diversity of competitors and government procuring agencies may affect supplier's decision not to participate in a B2G e-auction market. Supplier may avoid to confront with complex environment.
- Hostility	Newkirk 2006,	A supplier finds that the survival of the organization is currently threatened by scarce supply of labor, materials, and the tough price competition in a B2G e-auction markets, supplier may not want to participate in a B2G e- auction market.
<b>Mimetic Pressures</b>		
- Participation Among Competitors	Teo et al. 2003; Son and Benbasat 2007	A supplier perceives that its competitors have been participating in a B2G e-auction market. The supplier follows its competitors to avoid lagging behind in a B2G e-auction market (Teo et al. 2003).
- Perceived Success of Competitors	Teo et al. 2003; Son and Benbasat 2007	A supplier finds that its competitors obtained large benefits from participating in a B2G e-auction market. The supplier tends to imitate the behaviors of its competitors' success (DiMaggio and Walter 1983).
<b>Coercive Pressure</b>		
- Perceived Dominance of Customers	Teo et al. 2003; Son and Benbasat 2007	A supplier finds that government is a largest customer in the market. Government provides a large purchasing volume which may influence a supplier to participate in a B2G e-auction market (Hartley et al. 2004).
<b>Normative Pressures</b>		
- Participation in Professional and Trade Associations	Teo et al. 2003; Son and Benbasat 2007	A supplier, who is a member of professional organization or trade associations, obtained more opportunities and benefits for participating in B2G e-auction market. For example, the Thai suppliers obtained a 7%

		preferential margin if they registered with the Ministry of industry.
<b>Capability Based on Assets</b>		
- Economies of Scale	Mankiw 2006; Elmaghraby 2005	When a supplier experience economies of scale in production, supplier can obtained advantage of more unit of its production (Elmaghraby 2005). Economies of scale of supplier can be used as a source for competitive advantage.
- Excess Production Capacity	Elmaghraby 2005	Supplier may differ in its production capacity. Supplier can use its excess production capacity to supply products and services as its competitive advantage (Elmaghraby 2005).
<b>Capability Based on Competencies</b>		
- Top Management's IT self-efficacy	Compeau and Higgins 1995	The capability of top management to use the electronic auction system. If top management is not familiar or not capable to perform the electronic auction, this would be an obstacle for using electronic auction.
- Total Quality Management	Powell 1995	TQM can produce economic value as well as performance advantage to the supplier (Powell 1995). TQM produced managerial innovation such as just in time production and production development for obtained suppliers' competitive advantage.

## 5 CONCLUSION

In this paper, we have attempted to derive a theoretical framework for explaining supplier behaviours in a B2G e-auction context, by drawing from multiple disciplines. The outcome is derived from extensive and rigorous literature review. It is anticipated that the examination of three key constructs; efficiency motive, legitimacy motive, and supplier capabilities will help to identify reasons for suppliers' decision to participate in B2G e-auction markets in Thailand. Overall, we believe that this paper extends the understanding of supplier behaviours in the B2G e-auction markets. We also hope that the outcome of this study encourages new thinking and research into the B2G e-auction markets. Future steps include interviews and focus groups with suppliers in the Thai B2G e-auction markets to help use develop survey instruments, followed by pretest of the instruments, the main survey, and follow-up interviews (if necessary) to explore unexplained results.

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