

ปัจจัยที่มีอิทธิพลต่อพฤติกรรมของผู้ประกอบการในการเข้าร่วม
ตลาดการประมูลแบบอิเล็กทรอนิกส์ของภาครัฐในประเทศไทย

**Determinants of Suppliers' Participation in B2G
e-Auction Markets: Preliminary Evidence
from Thai Context**

กฤษฎา ดลปัญญา*
Kitsada Dolpanya

*Business Informatics Deputy Director, Business Informatics Program

บทคัดย่อ

งานวิจัยฉบับนี้นำเสนอกรอบโครงสร้างเพื่ออธิบายความตั้งใจของผู้ประกอบการในการเข้าร่วมการประมูลงานในตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐ รวมทั้งระดับของการเข้าร่วมการประมูลงานในตลาดดังกล่าว โดยงานวิจัยครั้งนี้จะทำการศึกษาในตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐของประเทศไทย ทั้งนี้การที่มีผู้ประกอบการเข้าร่วมการประมูลน้อยได้เป็นปัญหาหลักที่เกิดขึ้นในตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐ ซึ่งจะเป็นผลทำให้ตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐขาดสภาพการแข่งขัน อย่างไรก็ตาม งานวิจัยที่เกี่ยวกับการศึกษาพฤติกรรม การเข้าร่วมประมูลงานของผู้ประกอบการในตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐยังมีอยู่เป็นจำนวนน้อย โดยเฉพาะอย่างยิ่งที่เกี่ยวข้องกับตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐในประเทศกำลังพัฒนา ทั้งนี้ กรอบโครงสร้างของงานวิจัยนี้ได้พัฒนามาจากกรอบโครงสร้างเกี่ยวกับแรงจูงใจและความสามารถ (Motivation-Ability Framework) ทฤษฎีต้นทุนในการดำเนินการแลกเปลี่ยน (Transaction Cost Theory) ทฤษฎีทางสถาบัน (Institutional Theory) และทฤษฎีทรัพยากรเพื่อการแข่งขัน (Resource-Based Theory) จากกรอบโครงสร้างนี้ได้นำเสนอปัจจัยหลักที่มีอิทธิพลต่อความตั้งใจของผู้ประกอบการรวมทั้งระดับของการเข้าร่วมประมูลงานในตลาดการประมูลงานอิเล็กทรอนิกส์ภาครัฐ ซึ่งประกอบด้วย แรงจูงใจทางประสิทธิภาพ (efficiency motive) แรงจูงใจทางความชอบธรรม (legitimacy motive) สภาพความไม่แน่นอนทางธุรกิจ (environmental uncertainty) และความสามารถในการแข่งขันของผู้ประกอบการ (organisational capabilities) ทั้งนี้ งานวิจัยนี้ยังได้นำเสนอผลเบื้องต้นเพื่อสนับสนุนกรอบโครงสร้างงานวิจัยนี้

Abstract

In this paper, we propose a framework to explain suppliers' intention to participate, and the level of participation, in B2G electronic auction (e-auction) markets. This will be tested in the Thai e-auction markets. Evidences support that low supplier participation has been a major problem in this market, perhaps resulting in a non-competitive e-auction environment. However, research to understand the behaviour of supplier participation in B2G e-auction markets is lacking, particularly in developing countries. The conceptual framework draws from the Motivation-Ability Framework, Transaction Cost Theory, Institutional Theory, and Resource-Based Theory. It proposes that four key constructs — efficiency motive, legitimacy motive, environmental uncertainty, and organisational capabilities — influence suppliers' intention to participate, as well as their participation level. Preliminary evidence from the field provides initial support for the proposed framework.

คำสำคัญ : ผู้ประกอบการสู่ภาครัฐ, ตลาดการประมูลงานอิเล็กทรอนิกส์, การเข้าร่วมงานประมูลของผู้ประกอบการ

Keywords : Business-to-Government (B2G), electronic auction markets, suppliers' participation

1. INTRODUCTION

Business-to-Government (B2G) electronic markets can be considered as “business activity that involves a business selling its products or services to the central, regional or local government” (source: <http://business.govt.nz>). Electronic auction (e-auction) markets are increasingly being used in B2G electronic markets to create opportunity for suppliers to penetrate new markets (Beall et al., 2003). The majority of research on e-auction markets is focused on developed countries, primarily in North America and Europe (Germer et al., 2004). There is very little empirical evidence on how B2G e-auction markets perform in the context of developing countries, especially in the Thai context. 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. The literature also reports the need for transparency in e-government procurement, especially in developing countries (Rege, 2001). This study will therefore increase our understanding of how a B2G e-market will assist the Thai government in promoting the level of suppliers’ participation.

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 generally find the e-auction process attractive because of the tangible benefits of price reductions and the prospect of a reduced transaction cost (Beall et al., 2003). Similarly, suppliers can obtain benefits from opportunities to bid electronically for new business, to penetrate new markets, to create new low costs sales channels, to lower overall transaction costs for buyers in e-auction markets (Smeltzer and Carr, 2003), and also to obtain the benefit from the auction process cycle time reduction between bidding and winning the business (Smart and Harrison, 2003).

The Thai government has shown commitment in promoting the B2G e-auction markets by making it mandatory for all Thai government agencies to procure goods and services through e-auction markets. However, the Thai government faces a major problem pertaining to too few suppliers participating in these markets - this could result in a non-competitive electronic auction environment (NSO, 2007). Smeltzer and 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. Prior studies suggest that a sufficient number of qualified suppliers participating in B2G e-auction markets can significantly lead to a competitive market environment (Beall et al., 2003; Elmaghraby, 2005; 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 major determinants of suppliers' behaviour to participate 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 (e.g. B2B electronic marketplaces) (Son and Benbasat, 2007) as well as the research approach (e.g. qualitative case studies). 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. 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 four groups of factors in participation intention and participation level.

This paper has two main contributions. First, it presents a

conceptual framework for understanding suppliers' participation in B2G E-auction markets using Motivation-Ability Framework, Transaction Costs Theory, Institutional Theory, and Resource-Based Theory. Secondly, it presents preliminary evidence from the field for the initial support of this framework. Based on our results, the follow-up for this research will be discussed.

2. BRIEF Background

The Motivation-Ability framework was introduced by Merton (1957). It has also been applied in the marketing and strategic management literature to study organisation behaviour in terms of organisations' movement towards online channel. For example, Grewal et al. (2001) employed the motivation-ability framework to investigate organisational participation in business-to-business (B2B) e-markets. The authors found that electronic market participation depend on organisational motivation and ability. The authors also developed the efficiency construct from transaction cost economics, the legitimacy construct from the institutional theory, as well as the learning and IT capabilities from the Strategic Management literature. Son and Benbasat (2007) extend Grewal et al.'s (2001) work by identifying the salient factors rooted in efficiency

motive and legitimacy motive, which affect organisation buyer's adoption and use of B2B e-marketplaces.

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. Transactions may be divided into production and coordination costs (Malone et al., 1987). Coase (1937) proposed that the use of price mechanisms generates cost such as searching for prices, reaching an agreement and enforcing the commitments. As production costs remain constant regardless of the sale mechanism, this study will concentrate on coordination costs. If transaction costs are high, little or no economic activity from suppliers is likely to occur.

The institutional approach has been used to study organisations. Institutional environments are important for organisational structure and action (Son and Benbasat, 2007; Teo et al., 2003). The key idea behind institutionalization is that organisational action reflects a pattern of doing things that evolves over time and becomes legitimated within organisation and an environment (Eisenhardt, 1988). DiMaggio and Powell (1983) suggested three types of isomorphic pressures - mimetic,

coercive, and normative — that cause an organisation to have the same form with their environment (e.g. competitors or government/ buyer).

The Resource Based View (RBV) 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). Competencies develop when such resources are combined to create specific organisational ability (Teece et al., 1997). Hall (1993) suggested the sources of sustainable competitive advantage consist of two types of capability differential; namely, capabilities based on assets and capabilities based on competencies.

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) How do these factors interrelate?

3) Do these key factors play different roles in explaining suppliers' intention to participate and participation level?

3. A CONCEPTUAL Framework

In this section, we propose a conceptual theoretical framework to explain the factors that influence suppliers' participation in B2G e-auction markets. We propose that four main

constructs: efficiency motive, legitimacy motive, environmental uncertainty, and supplier capabilities - influence suppliers' participation (dependent variable) in B2G e-auction markets. Components of the proposed model (Figure 1) are explained below.

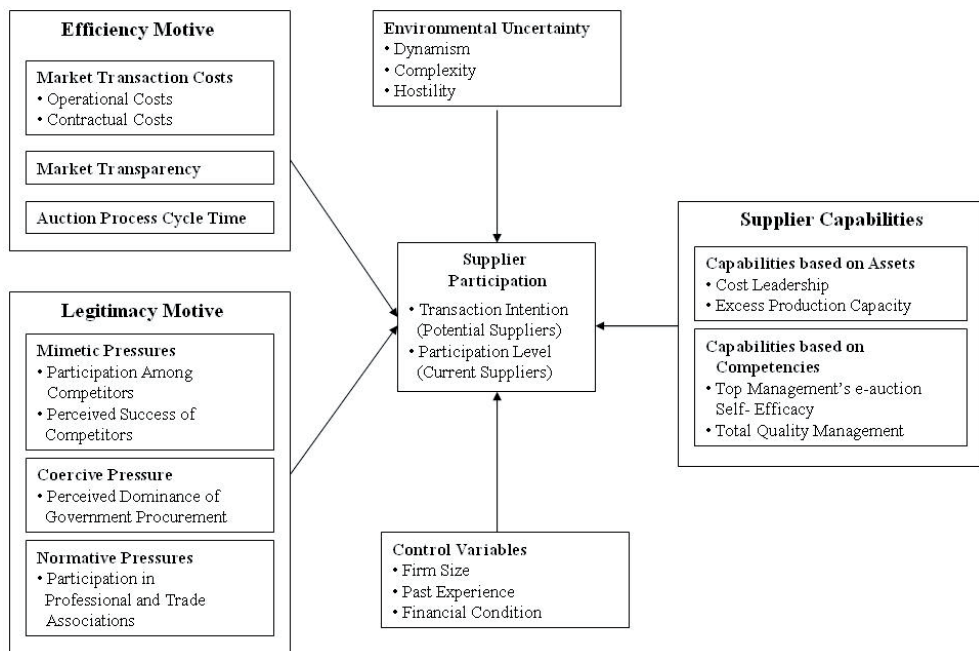


Figure 1: Research framework for suppliers' participation in B2G e-auction markets.

3.1 Supplier Participation

In B2G e-auction markets, suppliers' participation can be classified into two groups; transaction intention and their participation level. In the technology acceptance model and e-commerce literature, **transaction intention** is likely to influence future transaction behaviour (Davis, 1989; Son and Benbasat, 2007; Teo et al., 2003). Behavioural intention refers to the motivational factors that cause people to try to undertake a behaviour (Ajzen, 1991).

To deal with the varying levels of supplier activities in B2G e-auction markets, the participation level can be classified into four distinct stages: exploration stage, trial stage, commitment stage, and passive stage (Grewal et al., 2001; Son and Benbasat, 2007). A supplier firm can only be in one stage at any point in time (Grewal et al., 2001). 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**, the supplier has conducted several transactions through a B2G e-auction market, but is still evaluating the pros and cons of this means of doing business. In the **commitment stage**, the supplier has made a full

commitment as 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 looking to obtain both efficiency and effectiveness benefits. An e-market can reduce coordination costs, which include setting up a relationship, search costs, and market costs, between the buyers and the sellers (Bakos, 1991). We draw from the Transaction Cost Theory to study the economic organisation of how suppliers seek to minimize transaction costs (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, 1999).

E-markets offer facilities to support communicating information about price and production characteristics, and conducting transactions between buyers and sellers (Bakos, 1991; Ivang and Sorensen, 2005). E-markets can also help to reduce transaction costs that occur between buyers and suppliers (Bakos, 1991). **Market transaction costs** are

defined as the coordination costs involved in using outside markets, comprising operational costs and contractual costs (Gurbaxani and Whang, 1991). **Operational costs** refer to the costs for accessing market information and process transaction such as search costs and communication costs. **Contractual costs** refer to the costs of establishing and maintaining contractual relationships with outside parties, including costs of writing contracts and costs of enforcing contracts.

Hypothesis 1: Market transaction costs in a B2G e-auction market will negatively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

Market transparency is defined by Madhavan (2000) as "the ability of market participants to observe information about trading process". Suppliers can make decisions to participate in trading through e-auction markets based on information disclosure trading rule, price as well as information on transaction process (Granados et al., 2006). Increased transparency in e-auction markets would help suppliers to reduce the information processing

costs and opportunity costs of obtaining information about auction price and auction process.

Hypothesis 2: Information transparency in a B2G e-auction market will positively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

The use of traditional processes for government buying of goods and service can consume several weeks or months (Beall et al., 2003; MacManus, 1991). On the other hand, the use of e-auction markets can decrease **auction process cycle times** (Emiliani and Stec, 2005), which are condensed into a period of a few hours (Beall et al., 2003). Process cycle time reduction in B2G e-auction markets can benefit suppliers in that suppliers would be better able to plan production scheduling because time is reduced between bidding and winning the business (Beall et al., 2003).

Hypothesis 3: Auction process cycle time in a B2G e-auction market will negatively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

3.3 Legitimacy Motive

Much of the institutional literature emphasises that organisational structures and processes tend to become isomorphic with the accepted norms for organisations of particular types (DiMaggio and Powell, 1983). As with Teo et al. (2003), we focus on two specific types of **mimetic pressures**: 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.

Hypothesis 4: 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.

Coercive pressures is defined by DiMaggio and Powell (1983, p. 150) as "both formal and informal pressures exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisation

function". These pressures may take several forms, such as force, threats, persuasion, and invitation (DiMaggio and Powell, 1983).

Hypothesis 5: 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.

Normative pressures imply 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.

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

3.4 Environmental Uncertainty

Organisational theories have suggested that organisations must adapt their environment to remain viable in business (Duncan, 1972). Lee and Clark (1997) claimed that environmental uncertainty is inherent in e-markets. The

literature has identified many different environment dimensions. Three factors are viewed as particularly important (Kabadayi et al., 2007; Newkirk and Lederer, 2006) and have been included in a majority of e-commerce studies. They are dynamism, complexity, and hostility. **Dynamism** refers to the rate and unpredictability of environmental change. It is especially challenging for suppliers who need to participate in B2G e-auction markets (Kabadayi et al., 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 (Kabadayi et al., 2007). **Hostility** represents the availability of resources and the degree of competition in e-auction markets (Newkirk and Lederer, 2006).

Hypothesis 7: Environmental uncertainty in a B2G e-auction market will negatively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

3.5 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). 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 (Barney, 1991). Hall (1993) suggests that two types of supplier capabilities (capabilities based on assets and capabilities based on competencies) could influence a supplier to gain competitive advantage in markets.

According to **capabilities based on assets**, we propose two sub-constructs that can influence suppliers' decisions to participate in B2G e-auction markets. Cost leadership and excess production capacity would be used as sources for suppliers' competitive advantage in B2G e-auction markets (Elmaghraby, 2005). **Cost leadership** refers to supplier gaining sales by offering products and/or services at a price that is lower than that of competitors as well as pursuing economies of scale in production (Kabadayi et al., 2007). **Excess production capacity** infers a supplier may differ in its production capacity to gain competitive advantage in the markets. Excess production capability

can be used to supply products and services as supplier's competitive advantage (Elmaghraby, 2005).

Hypothesis 8: Capabilities based on assets of supplier will positively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

Hall (1993) proposed two types of **capabilities based on competencies** as sources of sustainable competitive advantage - functional capability (i.e. top management's e-auction self-efficacy) and cultural capability (i.e. total quality management). In the context of B2G e-auction markets, **top management's e-auction self-efficacy** refers to the perceptions of the owner and/or CEO of the supplier to manipulate the e-auction process 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, p.391). **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 lower costs

and improved customers' satisfaction (Beer, 2003).

Hypothesis 9: Capabilities based on competencies of a supplier will positively influence a supplier's intention to participate and the level of participation in the B2G e-auction market.

4. PRELIMINARY SUPPORT OF FRAMEWORK

In this Section, we report some initial high level empirical support for the proposed framework reported in Section 3, within the Thai context. Particularly, we wished to verify sources of Motivation-Ability factors of suppliers in the Thai B2G e-markets. Two sources of data were collected for this purpose:

1. secondary data (this is available online in Thai language from on the Thai government procurement information center website (www.gprocurement.go.th). Details are elaborated below.) and
2. a one hour telephone interview with a third party e-auction market representative, which is Pantavanij Company Limited (www.pantavanij.co.th) - the leading third party provider of e-auction services for Thai

government agencies to procure their products or services. The interview was conducted by the first author using the Thai language; this generated a two page summary.

The secondary data and interview suggest that B2G e-auction markets help both the government agencies (buyers) and suppliers to effectively manage their trading activities through these e-markets. The secondary data shows that the Thai government provides the following information online on the government website:

- procurement information - the initial bidding price, winning bidding price, potential suppliers, and a contract for the winning bidder,
- e-auction process information for the public to verify and monitor the e-auction process, and
- information on market activities to allow tracking for suppliers in the e-auction markets.

In addition, the interviewee conveyed that the Thai B2G e-auction market still face the problem of low level of supplier participation in the e-markets. The auctioneer felt that supplier participation in the e-markets

may be affected if there is a high level of economic uncertainty and competitive uncertainty. Even if some suppliers were awarded a government contract, it is possible they could not deliver the specified products/services to the government because they could not handle inconducive economic situations (for example economic recession can result in higher production costs and financial slack; as a result suppliers cannot profitably produce and deliver the products at the contract price). However, the distinctive capabilities of suppliers may enable them to outperform in the competitive marketplace.

The interview also suggest that some suppliers still desire to get a government contract (e.g. from the Bank of Thailand) even if a contract causes the supplier to lose some profit or even lower their total cost of ownership. This is because when a contract is awarded by the Bank of Thailand (i.e. government), it is beneficial for that supplier to engage in business with other financial institutions in the future. In some cases, suppliers may not want to participate in these e-markets because they perceive that the markets have been dominated by large-sized companies. Sometimes, suppliers may want to participate in

e-auction markets because they can take advantage of the opportunities of participation at a low cost (e.g. the low cost of entry fee); that is, the cost of not winning a government contract is not high. The interview thus, provides initial support for the research framework. Specifically, we find high level support for all the constructs at the highest level: efficiency motive, legitimacy motives, environmental uncertainty, and supplier capabilities. However, there was no initial indication of the sub-construct Normative Pressures.

5. Conclusion

In this paper, a theoretical framework for explaining supplier behaviour in a B2G e-auction context is proposed derived from an extensive and rigorous literature review with initial high level support. It is anticipated that the examination of four key constructs; efficiency motive, legitimacy motive,

environmental uncertainty, 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 Thai B2G e-auction markets. We also hope that the outcome of this study encourages new thinking and research into the B2G e-auction markets. The empirical evidence reported in this paper is at its preliminary stage, and represents the viewpoint of the auctioneer only. In the next step of this research, more interviews need to be conducted with other auctioneers, as well as representative suppliers, in order to further probe the relevance of the sub-constructs of each of the key high level constructs. Further exploration of the proposed framework will give us further confidence and insight into developing the survey instrument.

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