Factors affecting SMEs Adoption Decision of B2B E-marketplace: a Case Study in China

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Abstract—This paper focuses on Small and Medium Enterprises (SMEs) adoption decision of B2B e-marketplace in China. The purpose is to identify the factors driving or hindering SMEs to adopt B2B e-marketplace. First, based on Rogers’s innovation diffusion theory (IDT), eReadiness Model and TOE (technology-organization-environment) framework, theoretical model is formulated and ten key factors are identified. Then, a case study is presented. The top manager of four SMEs (two of them have adopted B2B e-marketplace and two of them have not adopted B2B e-marketplace) located in China are interviewed, for the purpose of find out the influence factors they considered when they make a decision of adopting B2B e-marketplace or not. Finally, the result and conclusions are presented.

Keywords—B2B e-marketplace; Adoption; TOE; E-readiness; Case study

I. INTRODUCTION (Heading 1)

Small to medium-sized firms (SMEs) make substantial contributions to national economies and the global economic growth [1]. In China, SMEs accounted for more than 99% of the number of all enterprises [2]. In recent years, with the rapid development of e-commerce, there is increasing number of SMEs who began to use e-commerce. According to the report of 100.cn, the number of SMEs having used the third-part B2B e-marketplace exceeded 17 millions by the end of December 2012 [3]. E-marketplace provides more chance and advantages for SMEs. But the fact is that there are still a lot of SMEs, which have not adopted e-marketplace, which makes them losing some chance in the competition with other enterprises in both domestic and global marketplace.

This paper focus on SMEs adoption decision of B2B e-marketplace, on the purpose of identifying the key factors driving or hindering SMEs to adopt B2B e-marketplace. We hope research result of this paper can bring some useful reference for the development and improvement of both B2B e-marketplace and SMEs. In this paper, B2B e-marketplace especially refer to the third-part or public marketplaces, which are owned and operated by one or more independent third parties, such as alibaba.com, HC360.com, DHgate.com, mysteel.com and so on.

The remainder of this paper is organized as follows: Section II is literature review. Section III put forward the theoretical model, case study and results are discussed in section IV. Conclusions are presented in section V.

II. LITERATURE REVIEW

Research on electronic markets adoption can be divided into four streams of research. The first stream of research mostly considers economic incentives such as reducing the search costs that buyers incur when sourcing suitable products, collecting product data, and comparing prices, and reducing the marketing cost ([4], [5], [6]). The second stream of research mostly focuses on the influence of characteristics of enterprises on adoption decision. The factors such as firm’s internal resource and e-readiness, availability of skilled employees, level of computerization, experience with network-based resources, financial resources and support of top management are found to be influential [7]. Firm’s size and resources available also are influencing factors in adoption [8]. The third stream of research discusses the influence factors from an institutional point of view, the research emphasizes that legitimacy-oriented factors including mimetic pressures (adoption among competitors, perceived success of competitor adopters) and normative pressures(adoption among suppliers, participation in professional and trade associations) have a significant impact on adoption intent [9], external pressure also have positive relationships with organizational adoption of e-Marketplaces [10].

The fourth stream of research investigates factors that hinder adoption of market systems. Through a case study conducted at the Hellenic Aerospace Industry (HAI), one of the largest industrial enterprises of Greece, Euripidis Loukis et al. draw a conclusion that the basic barriers for adopting B2B e-marketplaces were mainly of technological and organizational nature: difficulties of integration of its large and complex internal information systems with the e-marketplaces, lack of common technological and procedural standards for the communication and the exchange of information with all e-marketplaces, inconsistency with existing internal processes, rules and regulations, hesitation and unwillingness of some employees and lack of trust to unknown suppliers [11]. Lee and
Clark identified three types of adoption barriers that prevent successful electronic market systems: lack of an adequate electronic product description, thinness of the market (lack of critical mass), and resistance to change (inertia of old ways of doing business) [12]. Similarly, Fong, Fowler, and Swatman identified some of the success and failure factors of electronic markets, and Reimers identified the preconditions for electronic markets [13, 14].

In this paper, we try to identify the factors that drive and hinder SMEs to adopt B2B e-marketplace in China.”.

III. THEORETICAL MODEL

There is a wide variety of potential benefits and barriers to e-marketplace participation for small and medium sized businesses and there is no easy recipe for overcoming the challenges and realizing the benefits [15]. Based on literature review and TOE framework (Technology, Organization, Environment) founded by Tornatzky in 1990, a theoretical model (Figure 1) is developed. Ten key factors are identified from three dimensions: technology, organization and environment.

![Figure 1. Theoretical Model](image)

A. Technological Dimension

Based on Roger’s IDT, three influence factors — complexity, relative advantage and compatibility, are identified.

1) Complexity

It is complex for some enterprises to use e-marketplace, for example, they need to purchase new computer, network device and train the employees and so on. Thong (1999) believed the more complex for an information technology, the higher cost for enterprise to train the employees, and which has a negative influence on adoption the IT [16]. By the experience of MRP application, Cooper & Zmud (1990) presents technological complexity coming from mission complexity has a negative correlation with the final adoption [17].

2) Relative Advantage

The more relatively advantage of an innovation, the more fast speed of adopting it. Many researches show that the relative advantage of innovation and its adoption speed has a positive relationship [18]. The essence of E-marketplace is a platform of providing information and exchange service for the both sides of commerce. It has several functions: matching buyers and sellers, facilitation of transactions, institutional infrastructure. There are different motivations for SMEs to move into online trading through e-marketplaces. If SMEs take an optimistic attitude on the advantage of e-marketplace, it is more possible for them to adopt it.

3) Compatibility

Using B2B e-marketplace means SMEs need to provide proper hardware and software facilities. Moreover, some SMEs need to change their business process. The lack of compatibility has not only make many potential adopters lose their confidence to the innovation, but also lead to the failure in innovation diffusion or using process. Cooper & Zmud (1990) showed that, if MRP and current operation process of enterprise matched, which will increase the possibility to adopt MRP. The same institution occurs in E-marketplace adoption [17].

4) Network Externality

Network externalities (or called network effects) is deemed as a key factor influencing the adoption of E-marketplace [19]. In E-marketplace, any product’s value will increase with the increasing of participants. At this situation, the participants will face much more opportunities and alternatives, they can make choice in a large area and the possibility of using E-marketplace become higher. Therefore, this paper provides the hypothesis.

B. Organizational Dimension

There are three factors in organizational dimension: technology trust, IT capability and top manager support.

1) Technology Trust

Lack of trust in the IT industry [20] is one important hinder for SMEs to adopt e-marketplace. SMEs often do not have an understanding of the nature of the Internet and how it interacts with other methods of trading [15]. B2B E-marketplace is a new technology innovation, but many SMEs do not realize the value of B2B E-marketplace and forecast the effect of using e-marketplace. So they have suspect attitude on it and hesitate to adopt it.

2) IT Capability

According to [21], IT capability means a firm’s ability to utilize and deploy IT-related resources, which include hardware, software, databases, and other IT-enabled intangibles. To use B2B E-marketplace, enterprises must have basic IT infrastructure equipment, such as computer, network and so on. Lack of IT resources and knowledge [22], and the skill levels of business operators [23] to use e-marketplace do not lead to the successful application of B2B E-marketplace.

3) Top Manager Support
Top manager support is defined as the top level leaders or teams’ preference with some kind project. Based on the resource-based theory, the project gaining the support of top manager means it can get rich resource, because top manager controls the significant resource. Meanwhile, the support of top manager directly influences the decision of adopting. Among several researches, top manager support and preference are considered as key factor for adoption decision, and top manager support is positive correlation with adoption intention [24].

C. Environmental Dimension

We identify three influence factors in Environmental dimension: government e-readiness, industry environment and support industries

1) Government E-readiness

The role of government is an important consideration that may affect the adoption of innovations, especially in developing countries. The readiness of government to promote e-commerce defines the institutional environment within which businesses operate and influences their confidence and level of e-commerce aspirations [25]. The governments of developing countries often control technology development and thus can influence e-commerce implementation decisions.

2) Market Force E-readiness

Market forces e-readiness refers to the application and use of e-commerce by a firm’s competitors, customers, suppliers, and other business partners. Pressure from a business’s market forces (suppliers, clients, and other partners) has been identified as one of the key drivers for the adoption and subsequent level of utilization of e-commerce. Organizations that perceive market forces as ready for e-commerce are likely to adopt e-commerce or embark on more sophisticated e-commerce implementation from fear of competitive disadvantage, perceived e-commerce benefit, or simply “to catch up with the trend” [7].

3) Support Industries E-readiness

The conduct of E-marketplace depends on a number of support-giving industries, such as IT industry, financial industry, logistics industry etc. the lack of e-commerce readiness in some industry sectors [26] is common in most developing countries, the IT industry is not sufficiently developed to play supply push roles, the financial sector is not mature enough to handle electronic transactions, and transportation facilities are poorly developed [25]. These factors play an important role when organizations make the decision on whether to use B2B E-marketplace or not.

IV. Case Study

The case study methodology is the main method used in this research. The purpose of this study is to gain a clear understanding of the factors that affecting B2B e-marketplace adoption in SMEs. The case study method is suitable for the following reasons. Firstly, researcher has no control over the behavioral events, Secondly, the focus of this study is on a contemporary event. As this research took a qualitative approach thus a survey was not an appropriate approach because of its quantitative characteristics. Therefore, the proposed strategy for this research is case study [27].

A. Data Collection Method

A few SMEs were contacted for this research. The SMEs we chosen are introduced by my friends. First, we contacted some friends to affirm whether the companies they are working or have known are suitable for the research. The purpose and demand of this research are told to them, too. After discrimination, 9 enterprises are suitable and 4 of them agree to be interviewed. The 4 enterprises are simplified as A, B, C and D.

Our main interviewed people are the top management (chief executive officer, owner/manager, directors), and the manager of purchasing and sales &marketing department who are key member of the e-marketplace implementation team. The main sources of data collection are in depth face-to-face interviews and a review of published and internal documentation: Website, company profile, annual reports etc. The interviews were held between early March and late April 2013. Each interview session lasted over one hour.

B. Interview Outline Design and Interview Process

Interview outline are designed before formal interview. According to theoretical framework, we designed two different interview outlines for the enterprises they have used e-marketplace and the enterprises they have not adopted e-marketplace. Each interview outline includes two parts: (1) the basis information of enterprise, such as the industry they belong, the number of employee, the year they were found etc. (2) the influence factors that drive or hinder SMEs to adopt B2B e-marketplace.

Though the influence factors for adoption and no adoption we put forward in theoretical are same, we design different interview outline about this and ask different questions for the enterprise that have adopted e-marketplace and have not adopted e-marketplace. For example, we ask the question to the enterprises that have adopted e-marketplace: “Do you think that it is not complex to use e-marketplace? Does it a reason for you to use e-marketplace?” and ask the question to the enterprises that have not adopted e-marketplace “Do you think it is complex to use e-marketplace? Does it a reason for you not to use e-marketplace?”

According to theoretical model and influence factors identified, we designed ten questions, such as “Do you think it is complex to use e-marketplace?” “Do you think e-marketplace is useful?” “Do you think the top manager of your enterprise supports to use e-marketplace?” “Do you think that your customers and partners have used e-marketplace?” etc.

At the end of interview, we asked the interviewed person to list some reasons for them to adopt or not to adopt e-marketplace besides what we have talked about.

C. Results

The basic information of enterprises we interview is listed in Table 1.
According to case study, some conclusions are obtained.

First, the factors driving SMEs to adopt B2B e-marketplace include: not complex to use e-marketplace, usefulness of e-marketplace, bringing more business chance, having high IT capability in SEMs, top manager support, the support of Government for the development of e-marketplace including law, policy, technology etc, the incentive from their suppliers and customers who have used or are ready to use B2B e-marketplace.

Secondly, the factors hindering SMEs to adopt B2B e-marketplace include: little knowledge about e-marketplace, believing it can not bring much advantage and business chance, inconsistency with existing internal processes, rules and regulations, lack of trust to e-marketplace, lack of trust to unknown suppliers or customers, not getting support from the top manager, lack of the law, policy and technology provided by Government for using B2B e-marketplace, the customers and suppliers have not used or are not ready to use B2B e-marketplace, lack of the required and necessary service provided by the industry including IT, logistics, telecommunication, finance for using e-marketplace.

Finally, SMEs should obtain as much as possible information about B2B e-marketplace before they make decisions on adopting it or not. The reason for some SMEs refusing to use B2B e-marketplace is only because they know little about e-marketplace and do not know what advantages e-marketplace may bring them. The opportunities to extend trading beyond traditional market boundaries make all firms vulnerable to new sources of competition [15]. Meanwhile, the risks existed in e-marketplace can not be neglected. Online trade is one of directions for SMEs in the future. Therefore, understanding the benefit and barrier of e-marketplace is important and necessary for SMEs.

**REFERENCES**


