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FACTORS AFFECTING SMES' OWNERS/MANAGERS IN ADOPTION OF BUSINESS-TO-BUSINESS TECHNIQUES: A RESEARCH FRAMEWORK

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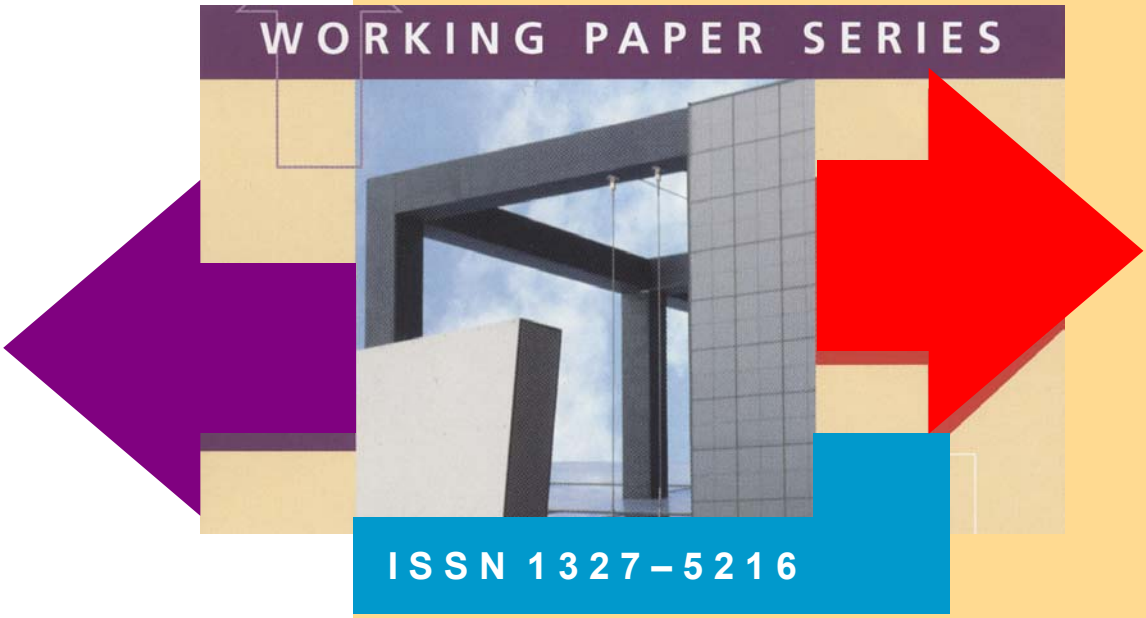

Abstract

This paper uses innovation and diffusion theory and the technology acceptance model as its theoretical basis. The paper proposes a new theoretical model that emphasises on Small to Medium Enterprises' adopting Business to Business electronic commerce by identifying the individual factors, including perceived usefulness, perceived ease of use, innovativeness, attitude, and behaviour as the factors affecting owners/managers decision to the adoption. Because of individuals' uniqueness and the nature of B2B techniques, differences in education, organisational culture, past experience with technology, and the pressures from important business partners and suppliers are identified as possible moderators for the effects of individual factors.

DEPARTMENT OF MANAGEMENT

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INTRODUCTION

With the revolution and innovation in communication technologies, Business-to-Business (B2B) techniques have been promoted as a way of cutting costs, transforming business and creating new value chains. B2B's ability to underpin productive growth in the economy and continual improvements in Information and Communication Technology (ICT) mean that many organisations are better able to participate in the global markets. Consequently, widespread use of B2B will probably bring significant changes to businesses, customers, suppliers, government and the economy.

The importance of Small to Medium sized Enterprises (SMEs) in economic development has received increasing attention from many researchers. SMEs comprise an important sector of all countries' economies and contribute to private sector employment. Recent technological innovations such as ICT and Internet technology are becoming more and more diffused amongst SMEs because barriers to the adoption have been substantially lowered by lower costs, open standards, and more ubiquitous Internet-based technologies (Hsiao, 2001; Scupola, 2002). It is believed that electronic business techniques could contribute to increasing the relative market power and competitiveness of SMEs.

Recently, SMEs' concerns regarding adoption of Electronic Commerce (EC) have been attracting numbers of researchers. B2B is probably becoming essential for SMEs as a way of maintaining or gaining a variety of competitive advantages and accessing global markets. There are good theoretical reasons for assuming that B2B techniques will help SMEs increase their abilities to compete with large organisations in global markets, these will be outlined below.

Research Background

The increasing availability of Internet technology is persuading and encouraging more SMEs' owners/managers to participate in the so-called "Electronic Commerce Era". B2B is claimed to be one of the fastest ever adapted technologies (Kshetri & Dholakia, 2002). Although the potential of B2B is widely acknowledged in industry, there is still little relevant literature, especially regarding SMEs. Because adopting B2B technique is somewhat similar to adopting Electronic Data Interchange (EDI) or Information Technology (IT) adoption, the literature from EDI and IT adoption is frequently cited in this research to support the frameworks and theoretical perspectives of this study.

SMEs arguably have distinct advantages over large organisations in adopting B2B and other types of EC. First, they are smaller, making them more nimble in decision-making (Kendall, Tung, Chua, Ng & Tan, 2001; Tang-Spru, Powell, Worlock & Bingham, 2000). Unlike large organisations encumbered with large bureaucracies, SMEs can make quicker decisions to engage in a particular market opportunity or to create a new product or service. Because of their size, Fink (1998) also suggested that SMEs are more dependent than other organisations on external sources of scientific and technological information. Consequently, SMEs are better able to respond and more flexible in adjusting to market condition and technology change than large organisations. This is advantageous because B2B and other type of EC techniques need to be applied throughout the entire organisation.

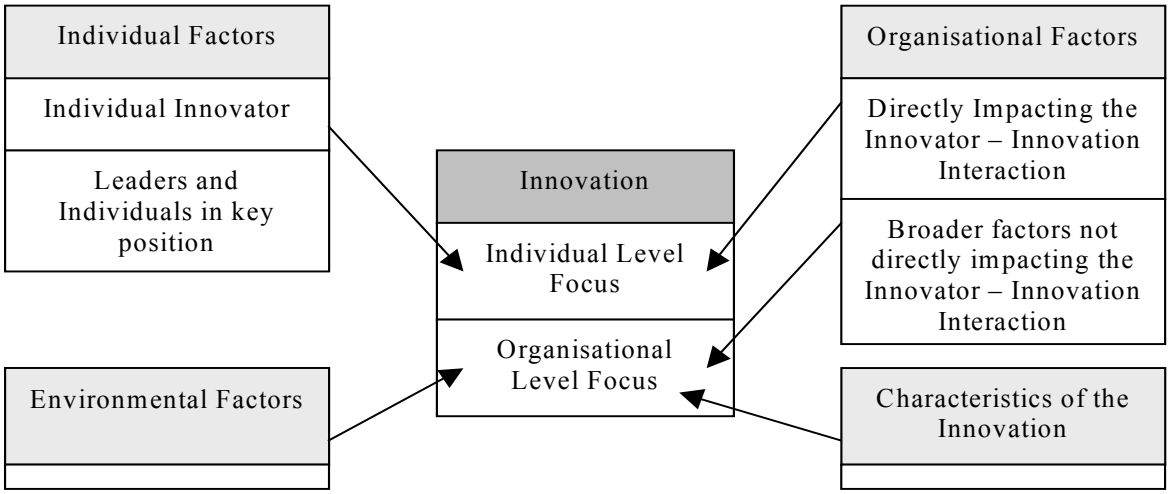
Second, SMEs less frequently have to struggle with legacy products or services (Kendall et al., 2001; Tang-Spru et al., 2000). They are in a better position to introduce products and services incorporating technological innovations to new markets. It is easier for them to adapt new ways of marketing, and they do not have the cumbersome decision-making processes characteristic of large organisations. However, Rovere (1996) suggested that the ability of SMEs to innovate or adopt new Information Technology depends on factors internal and external to the organisation and that their countries' culture and governmental policies may be influential.

Researchers of innovation and the adoption of IT have traditionally examined the effect of several variables on the innovation decision and classified these as acting at individual and organisational levels. Lakhanpal (1994) has usefully classified variables into four categories: individual factors, organisation factors, environmental factors and characteristics of the innovation itself. The way in which these categories are hypothesised to affect innovation decisions is summarised in Figure 1.

Motivated by the idea of SMEs' highly centralised structures and thin management structure, we hypothesise that decision-making in SMEs is dominated by the owners/managers (Thong & Yap, 1995). Thus, individual level focus – one of two main areas in Lakhanpal's model, would be comprise factors that strongly influence SMEs' adoption of B2B techniques.

This paper aims to examine the effect of factors affecting SMEs' adoption of B2B by discussing the relevant characteristics, attitudes and behaviours of SMEs' owners/managers. By proposing a new research framework and theoretical model, it is possible to explain the factors that strongly affect the decision of SMEs' owners/managers in adopting B2B techniques.

Figure 1: Lakhanpal's innovation decision framework



THEORETICAL PERSPECTIVES

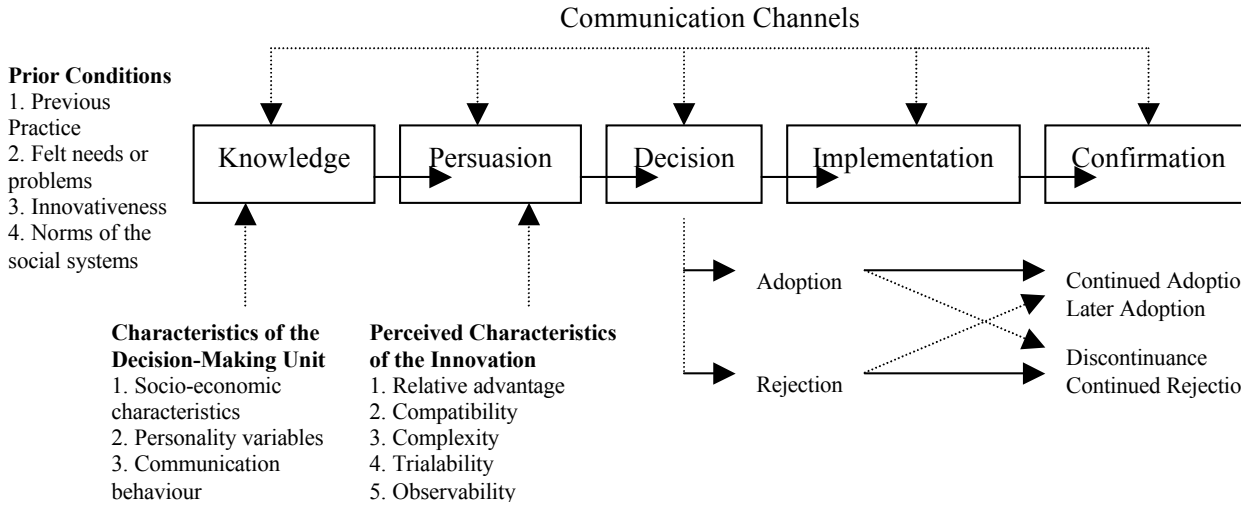
In studies of innovation in SMEs, researchers have focused on the owners/managers of SMEs especially their characteristics, behaviours and attitudes. This is because such individuals usually directly and/or indirectly dominate decision making in their organisations. Lakhanpal (1994) suggested that characteristics of individuals: innovators, leaders and other individuals in key positions have been observed to have significant impacts on explaining differences in the degree of innovation adoption. As B2B techniques are a relatively recent technological innovation, the technological innovation literature would be a good place to start identifying factors that might affect the individual adopting B2B in SMEs.

Innovation and Diffusion Theory

The idea of innovation is about presenting adopters with new means of solving problems and that is an encouragement for organisation moving towards technology adoption (Rogers, 1995; Runge & Lee, 2001; Thong, 1999).

Rogers (1995: 163) proposed a model of the innovation-decision process that emphasises the role of individual behaviour in the technology adoption process (see Figure 2). The model relates actions and choices during which an individual evaluates a new innovation and decides whether or not to incorporate it into an ongoing practice. The perceived advantage of adoption and the associated uncertainty are distinctive aspects of innovation decision-making process. SMEs' owners/managers would normally decide whether to adopt an innovation. During the decision process, the owners/managers would gather information from various sources and attempt to determine the innovation's utility. They will assess the proposed innovation's relative advantage, compatibility with existing systems, complexity, trialability[1], and observability[2] to decide whether or not to adopt the new innovation (Kendall et al., 2001; Rogers, 1995).

Figure 2: The model of the innovation-decision process



Source: Roger (1995: 163), "Innovation – Decision Process"

Kendall et al. (2001: 238) used Roger's model as a study framework and found that relative advantage and compatibility issues are the two most significant factors in determining SMEs' acceptance of EC in Singapore because their managers deal with the beliefs on how much EC will benefit the organisation and their perceptions of the importance of EC on their organisation now and in the future.

Rogers (1995) stressed that managerial attitude and innovativeness is a key factor in the innovation-decision process. They affect the way in which an individual or unit acquires knowledge about the proposed technology, lobbies for adoption, makes the decision, and implements the new technology. Thong & Yap (1995) and Fink (1998) also support the proposition that SMEs' owners/managers individual characteristics, attitude to IT and innovativeness are powerful determinations of IT adoption, and found that owners/managers who possessed a positive attitude towards IT were more likely to adopt new technology in their organisation.

Technology Acceptance Model (TAM)

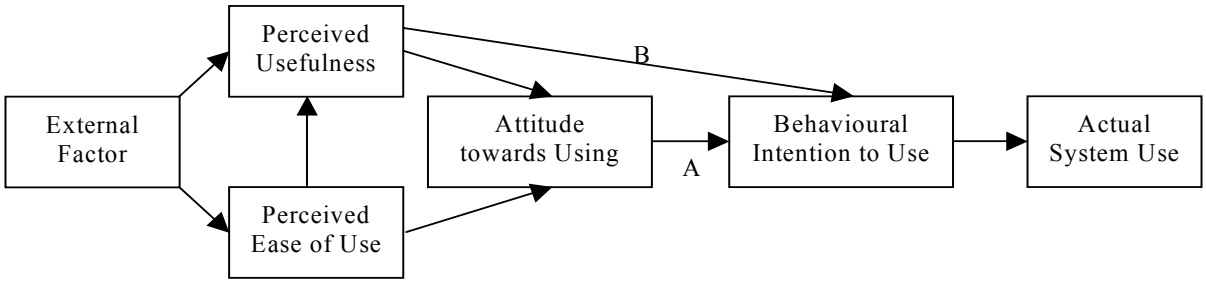
Like innovation and diffusion theory, the Technology Acceptance Model (TAM) is used to determine the factors causing an individual to accept or reject an IT innovation. The model attempts to explain individual decisions to adopt technology by considering the impact of external factors on internal beliefs, attitudes, and

[1] Rogers (1995: 16) defined trialability as "the degree to which an innovation may be experimented with on a limited basis".

[2] Rogers (1995: 16) defined observability as "the degree to which the results of innovations are visible to others".

intentions. TAM is an adaptation of Theory of Reasoned Action (TRA) specifically tailored for modelling the acceptance of technology adoption (Davis, Bagozzi & Warshaw, 1989; Riemenschneider, Harrison & Mykytyn Jr., 2003). The model contains two determinants – perceived usefulness (PU) and perceived ease of use (PEU) – that provide an explanation of IT acceptance that is general and capable of explaining individual behaviour across a broad range of end-user technologies and user populations, while being theoretically justified (Davis, Bagozzi & Warshaw, 1989).

Figure 3: Technology Acceptance Model (TAM)



Source: Davis, Bagozzi & Warshaw (1989: 985), "Technology Acceptance Model"

The model stresses that technology acceptance and usage is determined by intention to use, which determines actual systems use. Davis, Bagozzi & Warshaw (1989) explained that intention to use new technology can be explained in two ways: First, when both perceived usefulness and perceived ease of use are both positive, individuals will create intention to perform behaviours on the basis of positive attitude (as indicated by letter A in Figure 3); Second, individual will provoke the intention toward behaviours that is believed to be useful for a job performance without concerning either the ease of use is negative or positive (as indicated by letter B in Figure 3).

The result of previous studies (Davis, 1989: 1000; Davis, Bagozzi & Warshaw, 1989: 333) have confirmed that the perceived usefulness is more strongly linked to IT adoption and usage than perceived ease of use as people may be willing to tolerate a complex technology to gain an advantage from IT adoption. Therefore, it can be inferred that the perceived benefits from individual perception influence the decision-making process of IT adoption.

Gagnon, Sicotte & Posada (2000) studied the role of owners/managers' behaviours in SMEs' adoption of IT. They found that owner/manager behaviour is another important factor. This research detected a difference between entrepreneurial and administrative styles. Entrepreneurs focussed on people and their potential contribution and were loyal to the idea. Administrators saw relationships in a more formal manner, with specific rights and responsibilities for each person and formally defined delegation of authority. They focussed more on structures more than people. The two styles perceived success differently. Gagnon, Sicotte & Posada (2000) found that owners/managers with administrative styles were more likely to succeed in adopting technology than those with entrepreneurial styles.

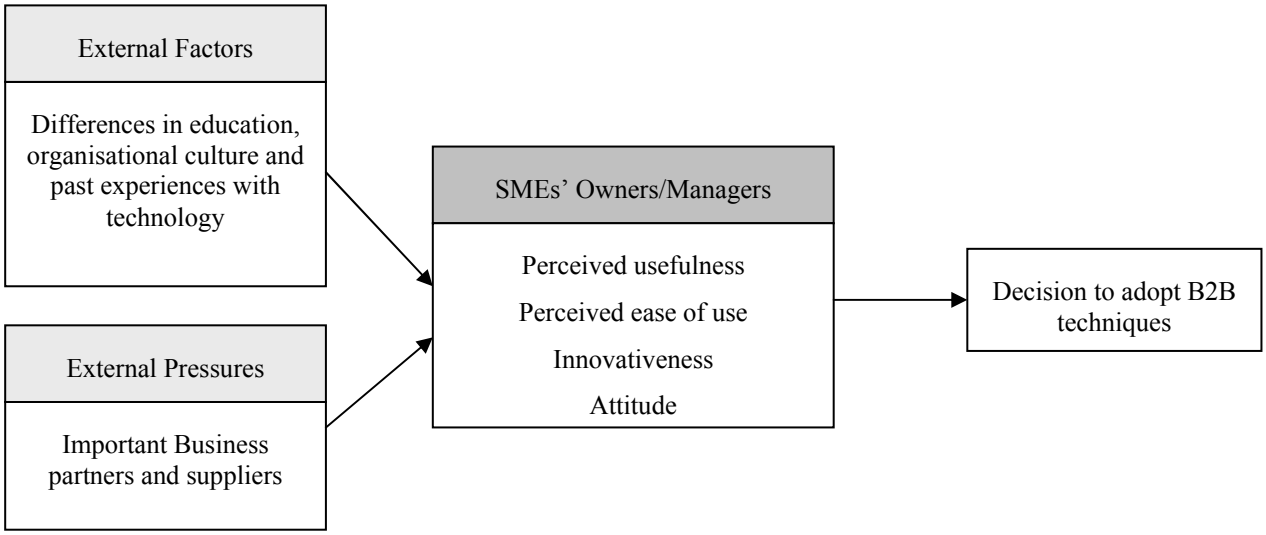
A Model of SMEs' Owners/Managers Adopting B2B Techniques

Perceived usefulness, perceived ease of use, innovativeness, attitude, and behaviour are factors importantly influencing individuals' IT adoption decisions. However, it should be emphasised that different individuals may perceive these factors differently: people with different education and living backgrounds, who worked in different organisation culture can project a variety of perceived usefulness, perceived ease of use, attitude, and behaviour. Rogers (1995) noted that differences in past experiences with technology also can result in the difference in level of innovativeness and attitude of an individual. Lakhanpal (1994) claimed that an

individual's level of education, prior experience with the innovation, and attitude towards innovation also influence the degree of innovation adoption.

Further, since B2B techniques are an IT infrastructure designed for inter-organisational communication, factors explaining successful adoption and use of B2B are likely to include inter-organisational activities and systems. Kshetri and Dholakia (2002) suggested that the B2B adoption decision is mostly influenced by inter-organisational factors like the nature of relationships between the organisation and its existing and potential trading partners, especially an SMEs' larger and more important partners. This is exemplified by the automotive industry (e.g. Iskandar, Kurokawa & LeBlanc, 2001). The characteristic of B2B as an inter-organisational concept needs to be taken into account. A critical business partner or supplier can compel an SME to adopt B2B techniques such as EDI or Web-based transactions. This is because SMEs that are doing business with many large organisations might not be able to accept the lost of business that may occur, if they do not adopt B2B techniques. Contrastingly, if there is a lack of B2B vision among business partners or suppliers, it may be difficult for an SME to adopt B2B techniques (Hsiao, 2001). These considerations are reflected in the theoretical model and framework of SMEs' adopting B2B shown in Figure 4.

Figure 4: The proposed SMEs' owners/managers adopting B2B framework



The proposed framework is expected to help identify and quantify the factors that influence SMEs' B2B adopting decisions. The model will be used primarily to study individual level factors.

CONCLUSION

The first step towards encouraging B2B adoption in SMEs is to identify, quantify and understand influent identifiable factors. Because owners/managers usually dominate SMEs decision-making processes, owners/managers' dominate technology adoption decisions in SMEs. It is also possible that other staff may contribute to earlier stages of the decision-making process by gathering data, defining criteria, developing implementation plans, arguing the case and creating a climate for change. However, the owner/manager still makes the final of decision. This paper hypothesises that several factors – perceived usefulness, perceived ease of use, innovativeness, attitude, and behaviour of owners/managers – influence SMEs' innovation decisions.

Innovation Diffusion Theory and Technology Acceptance Model share the idea that the decision-maker's perceptions of the factors mentioned above strongly influence B2B adoption in SMEs. The owner/manager who perceives the proposed technology's usefulness and benefit positively will probably adopt the new technology. The individual's attitudes toward, innovativeness and past experience of innovation and

behavioural style also influence an individual's perception of B2B innovations. It should be emphasis that each person's decision-making style is shaped by factors such as organisational culture and educational background. Different owner/managers, facing the same facts, would have a different perception of how important B2B adoption is to an organisation. Further, the influence of important business partners and suppliers may be decisive.

With the growing concern of B2B adoption in SMEs, this study is also be able to expand its concept to make a comparison of how owners/managers react to B2B adoption in many countries, for example making a comparison between developing and developed country. The model can be extended by using Hofstede (1983; 1984) organisational and national culture concept or the study under the GLOBE by House, Javidan, Hanges & Dorfman (2002) as another framework. While this study only considers the theoretical aspects and research framework on the issue of owners/managers influence B2B adoption in SMEs, it provides a good starting point for further research in this area. Future research requires developing hypotheses, creating methodology, gathering information and discussing the result of this particular topic.

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