Information Technology, Innovation and Value Creation as Business Competency in Thai SMEs

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Abstract

This study reports on the application of information technology and innovation that has created value through core competency enhancement in Thai medium sized companies looking at companies in Para Wood industry. The overall research is to investigate the technological, organizational and environmental factors that contribute to the perceptions of successful implementation of innovation management in Thai medium sized companies. This study uses a qualitative approach and the face-to-face interview method as it allows the researcher to explore in-depth perceptions, ideas and contributions of the interviewees. This study will be helpful for Thai medium sized companies to strengthen themselves and enhance value creation from within their organization. This study also provides a better understanding in identifying the performance of

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Thai medium sized companies in relation to technological, organisational, and environmental factors; and the impact of these factors on innovation and performance in improving business success. This paper reports on some initial findings.

Keywords: Information technology / Innovation / Core competency

Introduction

This paper reports on a case study on the use of information technology and innovations on value creation through core competency enhancement in Thai medium sized companies looking at companies in Para Wood industry. The 1997 economic crisis had a significant impact on nearly all Asian countries (Krugman 1998; Pempel 1999). Neil et al. (1998) noted that from July 1997, the most serious impacts began with the currency collapse in Thailand and that this crisis affected many countries in East Asia, with Indonesia being the most severely affected. This unexpected crisis led to severe, unforeseen and sudden impacts not only in the financial corporate sector but also significantly in society, with many households enduring the loss of jobs, wages and dignity (Maitree, 1999).

Following the economic crisis, Thailand encountered financial and economic management problems, as well as operational efficiency problems in various organizations. Net capital inflow of the country soared, overvaluation of the Thai Baht occurred, foreign investors flooded the market, and businesses closed down (Radelet & Sachs, 1998). Even worse, present political issues in Thailand are causing severe economic problems to the country (Dittmer 2008). The Thai government attempted to help business enterprises in addressing these

problems and to help them avoid collapse. The government has also been trying to support new businesses, especially the establishment of Small and Medium Enterprises (SMEs) to help boost the economy of the country (Deyo & Brockport, 1998; Soonthornthada & Sevilla, 2000). Many new organizations have been established, but these new organizations lack experience in efficient management in this competitive era, hence the importance of helping establish efficient and effective management systems. Adoption of IT and the ability to utilise the IT will enhance the performance capability of the organisation and it will lead to a core competency of the organisation.

This paper focuses on the vital contribution that Thai medium sized companies make to the development of business in Thailand through innovation and Information Technology (IT) adoption and business competency. The Parawood industry was used as a case study in this paper to investigate how technology, IT, and innovation have impacts on the Parawood businesses and the industry. Whislt the emergence of Parawood has been internationally accepted and they were considered as an environmentally friendly wood that were used worldwide to produce furniture products as they took finished and stains easily (Usubharatana et al., 2013). Furthermore, Thailand is one of the major countries and world's leaders in Parawood furniture exporting country (Usubharatana et al. 2013). Medium-sized companies are more labor-intensive and potentially can lead to a more efficient allocation of resources (Ameida et al., 2000). According to Asasen et al. (2003), SMEs remain the largest source of domestic employment in most developed countries, and of non-agricultural employment in virtually all developing economies. If the efforts to accelerate the industry are made in the right direction, the efforts would then be helpful to

upgrade the diversification and linkages among the regional economies as well as the country (Asasen et al., 2003). Hence, this research will explore how Thai enterprises can increase business value within their organization, based on their approach to value creation through their core competency enhancement with Information Technology (IT) and innovation. The data generated from this study will enable an evaluation of the validity of a conceptual framework, which has been developed in a western context and applied to Thai medium sized companies.

Review of Literature

Technology refers to the actions that an individual performs on a object with or without using a mechanical device in order to make some changes in that object (Perrow, 1967). Technology also refers to the implication of scientific knowledge that enables manipulation of human surroundings for the practical purpose of meeting human desire (Haines & Sharif, 2006). In addition, the term technology is also used to refer to the stock of knowledge that are developed or created with all industrial techniques available at a given time (Nieto, 2004). According to Mintzberg (1979, p. 249), “technology is clearly a major factor in the design of organization structure”. He also points out that, according to John Childs, “the term technology is employed in almost as many different senses as there are writers on the subjects” (Mintzberg, 1979, p. 249). Entrepreneurs appear to have an awareness of the benefits of adopting technology into the operation of business, in order to gain an advantage for their business (Prahalad & Hamel, 1990). Thus, better performance of operations can be

achieved. Information technology is a subset of these technologies where the base operations are computer-based (Tornatzky & Fieischer, 1990).

Roberts (1991) details the characteristics of technological entrepreneurs, and notes they are indeed different from general entrepreneurs because technological entrepreneurs tend to perceive a need to use technology in the organization and recognize its importance (Cardullo, 1999). Halachmi and Bouchaert (1994) classified technology into the following:

- Organisational Technology (traditional) - formal job descriptions, 'chain of command' lines of communication or organizational charts and accrued knowledge of people from previous generations (Mintzberg, 1979);

- Actual Technology (engineering technology)–tangible technology such as machines, skills, tools and other equipment (Mintzberg, 1979);

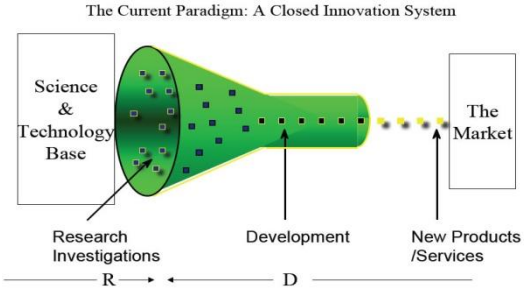
- Technology (Information Technology-IT) - to control an intensive use and level of sophistication of work processes (Perrow, 1967; Perrow, 1986; Thompson, 1967; Woodward, 1965).

Gatingnon et al. (2002) claimed that innovation is a broad concept involving people, processes, technology, and studies. From a micro perspective, Gaynor (2002) suggests that innovation is a management discipline that focuses on the organization's mission, searches for unique opportunities, and determines whether they fit the organization's strategic direction. Furthermore, innovation defines measures of performance success and continually reassesses opportunities for organizations to improve their business performance (Gaynor, 2002). Innovation can be anything that is new to the organization and is therefore important for businesses for sustainability

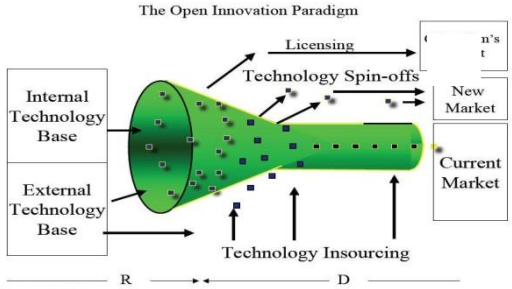
and competitive advantage. It is typically beneficial if the innovation is useful for the organization.

Two models of innovation were developed by Chesbrough (2003) for managing industrial research and development: a closed innovation paradigm (figure 1; a) and an open innovation paradigm (figure 1; b). In a closed innovation paradigm, it is suggested that many research projects are internally conducted for the development of products, processes, or services to ensure that they are well aligned to the customers' needs. Then, only well-developed projects will enter a market, and mostly for existing markets. In the open innovation paradigm, many research projects are conducted for development of products, processes, or services. They are from both internal and external sources. The knowledge, or projects, that are developed from outside can then be combined with internal research and development (R&D) or solely used depending on the appropriateness and suitability of industry. The projects will then enter to either an existing market only; or to new markets only; or to both existing and new markets. The two paradigms serve different purposes depending on the industry (Chesbrough, 2003). IT has been a key innovative technology that is itself an innovation but is also a catalyst to the development and adoption of other new technologies (Thong & Yap, 1996).

(a) A Closed Innovation System



(b) Open Innovation System



Source Chesbrough (2004)

Figure 1 Closed Innovation System and Open Innovation System

Even though innovations are popularly adopted in response to changes in internal and external environments (Damanpour & Evan, 1984), the adoption of innovation is intended to contribute to performance or effectiveness of organizations, and specifically Thai medium sized companies in this study. It is conceived to encompass the initiation, development, and implementation of new ideas or behaviours. Organisations can either purchase or develop the

innovation (Damanpour & Evan, 1984) upon the availability and capability of human resources, facilities, equipment, and financial ability to support.

Innovation has been conceptualised in many ways and studied from several perspectives (Damanpour & Evan, 1984). For example, open innovation (Chesbrough, 2003); organizational change and innovation processes (Poole et al., 2000); and innovation in SMEs (Nicholas & Abby, 2005). Schumpeter (1939) distinguished five different types of innovation which include: (1) new products; (2) new processes (technological process innovation and organizational innovation); (3) new sources of supply; (4) the exploration of new market; and (5) new ways to organize business. In new ways to organise business, the focus is on the customer, being ahead of competitors, and new operational principles, including the use of the Internet to conduct business (Kovacic, 2004). New and existing technologies such as IT and new innovations adopted by an organisation can strengthen the competency of the organization and effectively foster growth and sustainability (Boon & Van der Klink, 2001; Prahalad & Hamel, 1990). Hamel and Prahalad (1994, p. 197), argue that “core competencies are the gateways to future opportunities”. A core competency has: consistency throughout the entire enterprise; source of competitive differentiation; and difficulty for competitors to imitate. Most enterprises have between one and three core competencies which underpins their competitive advantage (Prahalad & Hamel, 1994).

These competencies and their relationship to the use of IT and other technologies in innovation adoption can be seen as being interrelated. Tornatzky and Fleischer (1990) developed a framework that

explores organizational, technological, and environmental factors; some researchers refer this framework as TOE or OTE. However, this paper recognises as OTE framework. Firstly, the organisational factors, or context, are defined because an organisation itself provides a rich source of structures and processes, for example, organisation structure, size, management style, and human resources. Secondly, the technological factors refer to tools, machines, skills or equipment that an organisation operates with. Lastly, environmental factors refer to the external environment that affects the operation of a firm. This model was developed and successfully used in the western countries such as European countries, some Asian countries such as China and Taiwan, and Australia. The author then attempted to apply this model in the Thai context. The interrelationships can be seen in Figure 2.

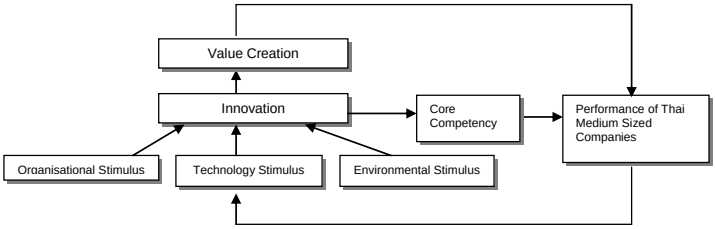


Figure 2 Research Framework using OTE

In this paper, the importance of the technological factors, notably IT, are compared with organizational and environmental factors to understand whether they are important in the creation of innovation and value creation for

Thai medium sized companies. The value proposition of the research is that the adoption of technology such as IT encourages innovation and this, in turn, enhances value creation and improves sustainability of the business. However, the Thai medium sized companies will have to encourage themselves and continuously find new technologies to support their operation to be able to compete with other competitors in this fierce competition and information technology era.

Research Methodology

This paper uses a qualitative approach (Silverman, 1985) to answer the research question: what are the technological, organisational, and environmental factors contributing to the perception of successful implementation of innovation in Thai SMEs? According to previous studies on Thai medium sized companies, there has been little research exploring value creation (Deyo & Brockport, 2000; Wiboonchutikala, 2001). This research will be helpful for Thai medium sized companies to enhance value creation using IT and technology from within their organization.

An interview schedule was created using the literature, conceptual framework and research question as a guide. As previously mentioned, this model was adopted in the western countries such as European countries, and Australia, a pretest of the interview questions (Converse & Presser, 1986; Silverman, 1985) was undertaken prior to the interviews taking place with owners of Australian medium sized companies and owners of Thai medium sized companies. They had a clear understanding of all questions and only minor changes were made to the interview questions. All

interviews were digitally recorded with the permission of the interviewees and the interviewer also took notes. The face-to-face interview method was used because it allowed the researcher to explore in-depth perceptions, ideas and contributions to obtain information from the interviewees. Each interview lasted approximately one and a half hours and they were conducted in Thai and translated into English for analysis (Minichiello et al., 1995).

Having approached the Director of the Industrial Cluster Development Division in the Ministry of Industrial of Thailand, suggestions were provided regarding many changes in the Thai Industry Estate and the characteristics of Thai medium sized companies over the last ten years. It was suggested that the possibility of obtaining information from Thai medium sized companies in the Industrial Estates of Thailand would be difficult because medium sized companies were fading away from the Industrial Estates of Thailand with reasons such as cost of location, cost of transportation, convenience of location, and new industrial development policies occurring in the last ten years. Therefore larger corporations relocated themselves in the Industrial Estates of Thailand instead of the medium sized companies. Originally, this paper planned to conduct a study in the Industrial Estates of Thailand. However, the Director suggested focusing on clusters, which would be more appropriate and productive for the research question. Amongst various industry clusters that were suggested by the government agency: the Para Wood Cluster was chosen in this study. The researcher then focused on medium sized companies.

Case studies (Yin, 2003) were adopted as they accept and encourage multiple methods of data collection procedures. In this study, the target population is focused on the Para Wood Industry as they are one of the clusters recommended and two companies are recruited by the Ministry of Industrial of Thailand to learn how they achieve value creation through innovation in business. The interviewed were recorded digitally and transcribed. Theme coding was used for the data analysis, according to the processes outlined in Miles and Huberman (1994).

A Case Study of Para Wood Industry in Thailand

Para wood is derived from the rubber tree (Kind, 2006) and used to manufacture furniture. Para is a tree of major economic importance because it can also produce latex, the primary source of natural rubber (Chanagant, 1997; Gazo & Quesada, 2005; Kind, 2006). Para wood has been used to replace other types of woods and involved in the furniture industry for more than 30 years due to the shortage of natural resources and deforestation problems (Chanagant, 1997; Gazo & Quesada, 2005; Supadarattanawong & Rodkwan, 2006). Most Thai Para wood furniture manufacturers are located throughout the country and the biggest locations are in the Chonburi province. Nowadays, this industry faces many obstacles including high wage rates and more competition in export markets. Major international competitors are mostly from China and Vietnam because they can produce Para wood products at lower costs and sustain cheaper operations. The environment is competitive and the business operations have to be cautious otherwise customers can switch to

competitors easily. Two companies of this typical industry are examined in this report.

Case 1: PWD Co., Ltd.

PWD Co. Ltd. had been operating in the industry for 12 years and was one of the major leaders in the Thai Para Wood Industry. Mr. K is the owner of the business and had gained significant business experience before he started this business. The following themes were identified as being of significance during the discussion, which also follow the OTE framework (Tornatzky & Fleischer, 1990).

1.1 Technology

Technology was an important part of the business. These technologies included traditional technologies (Dario et al., 1995), engineering technologies (Hutchins, 1999; Modica et al., 2001), and information technologies (Davenport & James, 1990; Davis, 1989) to support business processes. The finding revealed that PWD utilised traditional technology, which was the knowledge of local people from the previous generation. The traditional knowledge was used in PWD and adjusted with the present engineering technology such as for the wood sanding process. In addition, PWD invented machines themselves based on car technology because car technology was not too complicated and parts of car materials were at economy. At PWD, IT was fully utilised for new model development, designs, trends, and business contacts reasons. It could be seen that the adoption of technology and IT led to benefits to PWD resulted in cost reduction, operational time reduction, punctuality, accuracy, and high quality of productions.

1.2 Innovation

Innovation was identified in various categories (Gatignon et al., 2002; Gaynor, 2002). It was emphasised by the PWD business owner as being important nowadays and could be broken into the following categories: technological stimulus, organisational stimulus, and environmental stimulus.

A technological stimulus was defined in terms of the utilization of technologies in the organisation. The result of utilising technologies that benefit the organisation demonstrates how technologies were being used. Technological factors were considered one important factor in all businesses at present and it was cited by Porter (1985) in Sharif et al. (2006; p.107) that "technological innovations could have important strategic implications for individual companies and could greatly influence industries as a whole". Mr. K argued that "quality creates technology that could be adjusted and adapted within our industry at low cost." Mr. K implied that he was not concerned only to utilise technology, but also to utilised technology with quality. PWD had their own R&D for machines and they invented the machines themselves. The competitive advantage of PWD was with their R&D on machines. According to the open innovation system developed by Chesbrough (2003), PWD did not have only R&D internally, but also combined R&D externally as PWD designs own technology based on car technology. The major reason that car technology was used as a master machine design because parts and materials for replacement could be found easily in local area. Technologies being used at PWD had provided benefits to the company (Prahalad & Hamel, 1990). They allowed PWD to use them in several functions and at a lower cost compared to purchasing

ready-to-use technologies. PWD had adopted technologies into their company, which included traditional technology by applying prior generation's knowledge with the present generation of equipment or machines, engineering technologies by producing its own machines or equipment, and IT by utilising computers and related communication devices to take most benefits of them. The adoption of technologies by PWD demonstrated in its operational process and waste reduction. PWD had a high concerns in utilising the right machines for his products while achieving high productivity at high quality and at lower cost. PWD regularly sought information for new invention of machines around the world and compare the price, and received the cheap machines with high performance. Some machines were even invented locally at PWD by their research team after investigate the new models from other countries to lower the cost of machines down. The machines being invented and used at PWD could separate parts and recombine with the new one. The machines were reliable and compatible (Tornatzky & Fleischer, 1990) as they were passed through PWD's R&D before they were used for manufacturing.

Organisation was one key area of the management perspective (Poole et al., 2000; Prahalad & Hamel, 1990). Technology transfer, knowledge sharing, skills and problem solutions for problems sharing could help organisation to eliminate cost and overcome problems effectively. Culture came through as one aspect to be considered. People living in Chonburi province were from multi-culture and a combination of Buddhism, Christians and Islamic people. PWD realised that to organise people with

different cultural backgrounds to work together was a critical aspect (Prahalad & Hamel, 1994).

The important environmental stimuli in the Para Wood Industry were competition intensity and information intensity. Competition was not only from competitors within the country, but also from other countries, particularly China and Vietnam. These competitors could produce Para wood products at a cheaper cost. According to the utilisation of IT in PWD, IT was utilised for new design development, finding new trends, and was used for customer contacts.

The three stimuli (OTE) impact on the innovation of the organisation (Tornatzky & Fleischer, 1990), as shown by PWD Co., Ltd. Technological factors, organisational factors, and environmental factors highlight good operations within PWD. The three factors (OTE) provided a core competency to PWD Co., Ltd (Prahalad & Hamel, 1990; 1994), by successful and enhanced performance in their manufacturing processes. In addition, the adoption of IT in PWD helped enhance and facilitate PWD's capabilities to advance their communication ability and retrieve information to be able to compete with other competitors in the fierce competitive environment. The adoption of IT by PWD was new to the company. It was an IT innovation and it could be referred to as the processes of innovation and new ways to organise business as also mentioned in Schumpeter (1939).

Case 2: CC Co., Ltd.

After 20 years of experience in the industry, Mr. C decided to invest in a business on his own in the Para wood industry. He left a company with a big

debt burden and tried to find ways on his own in operating a business. He started his business, CC Co, Ltd., in 2003 and his business had been growing continuously.

2.1 Technology

The adoption of technology for innovation (Cardullo, 1999) was also seen at CC Co., Ltd. Mr. C adopted only engineering technologies (Mintzberg, 1979) and IT (Perrow, 1967; Woodward, 1965) for his operations. Mr. C stated that this was because he did not have a technological background but he would like to ensure that the adopted technology would fully benefit the operations of his business. In addition, Mr. C operated his Para Wood business based on his experience of the industry. Mr. C did not know deeply about the term 'technology'. He realised that if he could not invent a machine by himself, or borrow from other people, then he could buy the machines. He preferred using purchased technology because he could ensure that they could be fully functioned according to their life-time. He also realised that warrantee, maintenance, and after-sales-service come with the purchased machines. Mr. C explained further that it was worth investing in machines for the operation of his business as he elaborated that "You cannot borrow machines from other people every time when you need them for your work. What if the machines are not available at the time you need? What are you going to do if you break their machines? There are many other questions coming up. I then decided to purchase the machines myself. I will find additional orders to utilize the machine. I will not stop. I think it is worth to invest for machines". According to Mr. C, the CC Co., Ltd. had employed

only engineering technology (Mintzberg, 1979) and some IT technology (Davenport & James, 1990; Perrow, 1967). Traditional technology (Dario et al., 1995) had not been used in his company.

2.2 Innovation

Mr. C did not know much about innovation but he realised that innovation was important. He understood that using new and modern machines would benefit to the company and they were considered to be innovation. Therefore, he adopted the idea of innovation. He explained that he had attempted in every way to have work refined for better performance. Thus, time and cost reductions were achieved in his operations. He tried to transfer his experience and knowledge to his workers through training at work. Mr. C further explained that CC saved man-power and also produce quality products because all the products are controlled and produced by the machine. In Case 2, the findings demonstrated that CC was aware of the importance of innovation that could positively impact his manufacturing process (Prahalad & Hamel, 1990; 1994).

Mr. C concerned about the utilization of technology in his organisation (Cardullo, 1999). He realised that technologies would ease his manufacturing operation, save money and manufacture products at a high quality (Tornatzky & Fleischer, 1990). At the interview process, Mr. C suggested that good technology should help the manufacturing to save time and save cost. He also argued, “pieces of woods need to be standardised. All products had to be accurate and reliable to satisfy customers”, Mr. C noted. It was appeared that designs and engineers chosen to work in his manufacturing firm were well suited as the machines, tools, skills, and equipment are specific for

manufacturing tasks. They are then considered to be functional, reliable and usable (Tornatzky & Fleischer, 1990). These machines however brought him benefits and advantages related to the quality of products and cost reductions as a result (Prahalad & Hamel, 1994). In summary, CC Company had adopted engineering technologies by utilising the ready-to-use machines and equipments. The adoption of these engineering technologies contributes to the innovation of better operational processes in his company.

Mr. C also realised the importance of organisational factors (Poole et al., 2000). He mentioned many organisational factors including the size of the organisation, performance, management style, finance and investments, and cultural and HR factors during the interview (Damanpour & Evan, 1984). CC is a small organisation and was started in 2004 in a very small size. Then CC was expanded its manufacturing site two years after the business was started. CC had both men and women employees. Mr. C managed the business as family like and the organisational structure was very simple. The products were produced by passing through the lines and all employees had their own responsibility at the lines. In Case 2, Mr. C did not want a large organisation and Mr C kept number of employees at his business below 100 people. He was concerned that size impacted the quality of management and quality of productions at the same time (Damanpour & Evan, 1984). He kept his management style as simple as possible as he explained that too formal was too difficult to manage (Roberts, 1991).

With the intensity of competition and IT utilization (Boyatzis, 1982), businesses struggle to survive. Mr. C transformed himself from an employee

of one big organisation into an entrepreneur and has tried to find ways for his business (Prahalad & Hamel, 1994). The IT environment was one of the factors that is of a concern to Mr. C. He understood that IT grew rapidly and it was important to address this. Even though he was not familiar with IT, his wife was. His wife helped identify many ways to respond to orders by utilising IT (Damanpour & Evan, 1984). As mentioned by Mr. C, he could identify business competition and he found ways to compete with competitors in this fierce competitive era. To be able to survive, he understood that the adoption of technology, IT and innovation was important (Davenport & James 1990). Without acknowledging the importance of technology, IT and innovation, his company could fall behind his competitors. Therefore, Case 2 confirms the importance of the OTE factors that could lead to innovations in CC Co, Ltd. The innovations could then be strengthened and developed into core competencies for CC Co, Ltd. It could be concluded that Case 2 had process innovation and new ways to organise business innovation by utilising IT. However, the IT in Case 2 was defined in terms of computers and its applications, such as the Internet. However, a comparison of these two companies was provided in the table 1.

Table 1 Comparison between Case 1 and Case 2

	Case 1: PWD Co., Ltd.	Case 2: CC Co., Ltd.
Technology	Employed traditional technology, engineering technology, and utilise of IT technology.	Employed high engineering technology and utilise parts of IT technology.
	Regards the importance of technologies	Regarded the importance of technologies
Innovation		
- Technological	Studied, learned and adjust technologies for local usage and suitable for its manufacturing adaptability.	Invested in reliable engineering technology.
	Regarded the importance of technological factors	Regarded the importance of technological factors
- Organizational	Developed own organization culture, system, and transferred knowledge amongst people from within organisation and outside.	Developed own organization culture, system, and transferred knowledge amongst people from within organisation and outside.
	Regarded the importance of organizational factors	Regarded the importance of organizational factors
- Environmental	High competition intensity both locally and internationally.	High competition intensity both locally and internationally.
	Fully utilised IT.	Part of IT had been utilised.

Comparing to Chesbrough (2003) in relation to the Para Wood industry, the open innovation model was followed. R&D from the organisation in

Case 1 demonstrated the ability to combine external R&D with internal R&D to develop and invent new machines for appropriate use within the organisation. Case 2 also adopted an open innovation system into its organisation as CC Co, Ltd. was use 'plug and play' technology to ensure accuracy and reliability of products in its organisation (Tornatzky & Fleischer, 1990). Table 1 demonstrates the differences between Case 1 and Case 2 in comparing the types of technologies they utilise, the innovations of their organisation and the environment of their business (Damanpour & Evan, 1984).

The innovations that was seen in Case 1 includes reducing waste, operational process innovations, managing human resources in order to obtain greater productivity from the performance of their employees, and the use of internet and IT to facilitate their business (IT innovation). In Case 2, operational process innovations and managing human resources could be seen. According to Schumpeter (1939), innovations of both cases are "new processes" (technological process innovation and organizational innovation) and new ways to organise business to focus on the customers, being ahead of competitors, and new operational principles, including the use of the Internet to conduct business (Kovacic, 2004).

In identifying core competencies (Vic & and important factors in a corporation, both cases have potential access to the market; they can make a significant contribution to the perceived customer benefits to the end product; and they have their own management style that makes it difficult for competitors to imitate (Prahalad & Hamel, 1990). According to Table 1, both Case 1 and Case 2 had adopted technologies and innovations to facilitate their operations. These innovations refered to the invention of new machines in Case 1 to

facilitate the operational processes of the company and the utilisation of ready-to-use machines in Case 2 to ease facilitating the operational processes in the CC company. Their adoptions were effective because the results turned in a better performance (Lin & Chen, 2007) and that could be demonstrated in their achievements, number of sales and cost reductions. In regards to technology, Case 1 employed traditional technology, engineering technology, and IT technology (Thong & Yap, 1996). They regarded these technologies as well suited with the size of the organisation and management style (Damanpour, 1992). Case 2 employed engineering technology and utilised parts of IT technology. Both cases referred to the importance of technologies. In regards to innovation, three factors were highlighted. Education about technological factors was raised in Case 1, and Case 2 adopted the ready-to-use technology, as they were reliable and functional. Both cases agreed on the development of their own organisational culture and continually improve themselves according to the rapid changes of markets and environments. In addition, both cases agreed on the importance of IT adoption and realised that cautious strategic management is required for their businesses to survive in this fiercely competitive environment. In regards to organisational factors, according to the case studies, the size of the organization should not exceed 100 people in order to avoid conflict within the organisation. Human resources were considered as one important factor that is found in this study because Thai's tend to achieve a higher level of education. Thus, they wanted to get good jobs and less people therefore want to work in the hard labour market. Training had to allow workers to develop good skills and practises. In this case, workers felt confident to undertake tasks allocated to them. In addition to environmental

factors, high competition intensity could be seen in almost all industries. This was addressed by Mr. K in the interview. “In Para Wood industry in Thailand, it is in a declining stage. The competition condition creates a difficult environment as a barrier for new entries to get into the industry while existing companies find themselves difficult to get reliable orders from customers”. The major competitors were not just from Thailand, but also internationally. Customers could find products at a cheaper price. IT intensity was another important environmental factor at present. Most companies utilised IT for communication, facilitating management, and searching for information. Without utilising IT, they could fall behind their competitors.

Discussion

In summary, the adoption of technologies and innovations of both companies had developed substantially in the current global business environment and this has resulted in the rapid pace of technological change leading to an increased frequency of radical innovations being used in organisations today. Within this context, understanding the origin of value creation is important and it needs to be further explored, especially for medium sized companies in a developing country such as Thailand. The result of the study highlights the technological, organisational and environmental factors and the contribution to the perceptions of successful implementation of innovation management in the Para Wood industry.

The case studies demonstrate that businesses in this highly competitive and IT-driven environment should focus on their core competencies. On the other hand, Information Technology and Innovation were

considered that they could be value creation to the Thai SMEs. Whist the Thai SMEs emphasised and used appropriately, they could operate their business at profit level and ahead of their competitors in this fierce competition era. Financial factors alone could not contribute to a truly successful organisation. Various factors need to be considered. An adoption of innovation is proposed in this paper where innovation comprises of organisational factors, technological factors and environmental factors. These three factors then generate core competencies of the organisations. The practical implications for businesses, particularly medium sized companies, are:

- Keep organisation small as possible [at optimum size] (Damanpour & Evan, 1984) as agreed by both companies. Larger organisations tend to generate associated problems such as conflicts with internal laws and policies, management problems and the ability to operate business.

- Organisational cultures are required in order to provide a good environment for people with different backgrounds to work in the same organisation.

- Work is reported directly to the owner as medium sized companies are not big organisations (Drucker, 1998).

- IT, technology and innovation adoption should be a high priority for owners or managers of medium sized companies (Thong & Yap, 1996).

- Find internal strengths from the proposed three factors (OTE) to generate core competencies within the organisation (Prahalad & Hamel, 1990).

From the findings of this study, the researcher found that value creation from both cases were created in each organisation and were

internally beneficial for their businesses as they helped both organisations to reduce wastes and improve operational efficiency.

Future research should explore other industries within Thailand, such as Foods, Handicrafts, and OEM industries. Furthermore, future research could focus on the other two categories of medium sized companies, which are service and trading (wholesalers and retailers) by utilising the framework to provide the Thai government information to understand characteristics of Thai medium sized companies and their actual needs. This information will assist the Thai government to develop appropriate policies, support Thai industries (Dittmer, 2008; Soonthornthada & Sevilla, 2000) and help Thai medium sized companies to survive, particularly in this fiercely competitive era.

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