

# Knowledge Management Practice: Case Study of Thai SMEs in the Manufacturing Sector

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**Abstract:** The founding of the AEC (Association of Southeast Asian Nations Economic Community) in late 2015 is contributing to further opportunities in the international market for ASEAN (Association of South Eastern Asian Nations) countries. However, this is also leading to greater competition through an increase in the number of businesses. In Thailand, part of the ASEAN Economic Community (AEC), SMEs (Small and Medium Enterprises) are significantly important to economic growth, employment rate, GDP and therefore their success has a critical impact on society. In this period of transition, Thai SMEs need the right supporting tools for their organisation to survive and grow. Globally, the adoption of Knowledge Management is becoming widespread with the potential to improve productivity and efficiency of various organisations. Successful Knowledge Management will benefit organisations through improving decision-making, quality of products/services whilst reducing the process lead-time and operational costs thus, contributing to market competitiveness. Despite, the large number of studies on Knowledge Management only few studies focus on SMEs. Furthermore, a systematic literature review conducted as part of this study highlights that whilst Knowledge Management research has been carried out in Thailand much of it is not accessible to non-Thai due to language. Therefore, the aim of this study is to identify the current practice of Knowledge Management in Thai SMEs within the manufacturing sector and to examine how employees in the organization capture, share and store their knowledge as well as their perceptions about Knowledge Management. Survey questionnaires were distributed to SMEs in Manufacturing Sector in Thailand via online survey software (Qualtrics) and paper based version depending on participants' preference. The total respondents are 311 within 20 manufacturing SMEs across several business sectors. The paper focuses on two research questions which highlight the key differences that exist in knowledge management practices and perceptions in different sized SME's and between management and operational staff roles. In general, the results show the majority of employees in SMEs in Thailand consider Knowledge Management to be a beneficial tool with the potential to solve problems at work. However, it appears that the biggest barrier to knowledge capture is a lack of clear guidelines. Furthermore, the biggest barrier to sharing and storing knowledge is lack of time. This paper reports on the results obtained within Thailand. These results are part of a wider study which is currently drawing comparisons between Thailand and The United Kingdom.

**Keywords:** knowledge management (KM), small and medium enterprises (SMEs), manufacturing, Thailand, case study

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## 1. Introduction

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967 in Bangkok, Thailand, by the Founding Fathers of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei Darussalam then joined, Viet Nam, Lao PDR, Myanmar and Cambodia, to make the ten Member States of ASEAN at present. In 2015 ASEAN agreed to implement "AEC" (the ASEAN Economic Community) launching a single market and allowing the free flow of goods, services, capital, and labour, with the potential to become one of the largest economies and markets in the world. Currently, SMEs (Small and Medium Enterprises) are significantly important to the economic growth, employment rate and GDP and as such their success is of critical importance to Thailand. SMEs are located all over Thailand, not just big cities such as Bangkok. Therefore improving the performance of SMEs could improve the quality of life in every area in Thailand. In this period of transition during the AEC implementation process, Thai SMEs need the right tools to support their organisation to survive and be able to compete within a larger market place. Globally, the adoption of Knowledge Management is becoming widespread to improve productivity and efficiency of organisations. Successful Knowledge Management will benefit organisations through improving decision-making, quality of products/services whilst reducing the process lead-time and operational costs thus, contributing to market competitiveness. Therefore, the aim of this study is to identify the current Knowledge Management practices in Thai SMEs within the manufacturing sector and to examine how employees in the organization capture, share and store their knowledge as well as their perceptions about Knowledge Management. These results will inform the future development of a Framework for the successful implementation of Knowledge Management in Thai SME's.

### 1.1 Knowledge management

The definition of knowledge management is a systematic optimization strategy to improve business and employee performance (Bergeron, 2003). It is also defined as awareness of getting the right knowledge to the right people at the right time to improve organisational performance (Seng et al, 2002). Vasquez-Bravo et al (2011) stated that Knowledge can be divided into two different characteristics; Tacit and explicit knowledge. Tacit knowledge is mostly informal knowledge discovered by experience. While, explicit knowledge is more formal, writable and systematic. Dalkir (2005, p.26) presented the Zack knowledge management cycle, which states the keys stages in the implementation of successful Knowledge Management within an organisation as:

- Capturing Knowledge
- Refining Knowledge
- Storing and retrieving Knowledge
- Distributing Knowledge
- Presenting Knowledge (iteration back to 1)

Moreover, the most important factor in identifying the correct Knowledge Management strategy for an organization is to understand the key success and failure factors (Choochote, 2013). Therefore, the aim of this research is to capture a clear understanding of current Knowledge Management practice in Thai SMEs in order to develop a successful framework for Knowledge Management implementation in Thai SMEs

### 1.2 Small and medium enterprise (SME’s) in manufacturing sector in Thailand

Thai SME’s are divided into 4 sectors which are Manufacturing, Service, Wholesale and Retail by number of employees and value of fixed assets. Small and Medium Enterprises can be defined as below;

**Table 1:** Definition of SMEs in Thailand (Ministry of Industry, 2002)

Industry Sector	Small Business		Medium Business	
	Number of Employees	Fixed Asset (Million THB)	Number of Employees	Fixed Asset (Million THB)
Manufacturing	Less than 50	Less than 50	51 - 200	50 - 200
Service	Less than 50	Less than 50	51 - 200	50 - 200
Wholesale	Less than 25	Less than 50	26 – 50	50 - 100
Retail	Less than 15	Less than 50	16 – 30	30 - 60

The definition of Small Manufacturing enterprise is defined by the fixed asset which is not greater than 50 million baht with no more than 50 staff while fixed asset for the Medium Manufacturing enterprise is between 50 – 200 million baht with number of employees is between 50 – 200.

According to the latest Thai SME’s white paper report (2014), SME’s account for 80% of overall employment in Thailand with the manufacturing sector contributing 28.31% of overall SMEs’ employment rate. SME’s also contributed 1,319,083.0 million baht or 33.7% of the total GDP in the manufacturing sector. Small and medium enterprises (SMEs) with the highest GDP value in the manufacturing sector were those in food and beverage constituting a total of 224,478.6 million baht or 17.0% of the overall GDP of SMEs in the manufacturing sector.

## 2. Literature review

This section will cover a brief overview of literature relevant to this paper. In particular, studies of Knowledge Management in SME’s, Knowledge Management in SME’s across different countries and SME’s working in the manufacturing industry.

Small and Medium Enterprises can benefit from Knowledge Management activities in several ways including increased productivity, improved process, employee development and customer satisfaction (Edvardsson and Durst, 2013). Despite this Durst and Edvardsson (2012) acknowledge that the study of Knowledge Management in SMEs is limited, with only 3 areas being well researched which are Knowledge Management Implementation, Knowledge Management Perception and Knowledge Transfer. They suggest that further research in other areas is required to fully understand Knowledge Management in SME’s with Knowledge identification and storing knowledge highlighted as potential areas requiring further investigation. Hutchinson and Quintas (2008) revealed that some SME’s are engaging Knowledge Management in their work without recognising that they are

actually doing so. SMEs manage knowledge in humanistic way adopting people centered knowledge (Desouza and Awazu, 2006). Most SMEs have limited technology adoption therefore, putting knowledge into practice will improve performance.

Massaro et al (2016) state that Knowledge Management is fragmented with only a few studies focusing on comparisons between countries and little attention in some locations. Knowledge Management is in early stages in developing countries. Choochote (2012) reports on a study of Knowledge Management in SMEs within automotive manufacturing in developing countries and highlights the most influential factor for successful Knowledge Management is understanding the Knowledge Management process. Eze et al (2013) present a Malaysian based case study which highlights the need for SMEs in the manufacturing sector to ensure both technical and social issues are considered for success. This study also shows that a key factor affecting Knowledge sharing in SMEs in manufacturing sector is trust among employees.

A systematic literature review was conducted to access the current research on Knowledge Management as well as to find the current practice of Knowledge Management in Thai SMEs in the manufacturing sector. ProQuest and Engineering Village databases (Inspect and Compendex) were used to cover both business and engineering perspectives. The keywords selected were Knowledge Management, KM, Small and Medium Enterprise, small and medium firm, SMEs, Thai and Thailand. The outcome for these keywords was only 41 publications. However, once the abstracts were reviewed, only 5 publications were found to be related to Knowledge Management in Thai SME's. Thus demonstrating that there is lack of published work relating to Knowledge Management in Thai SMEs despite the fact that SMEs play a significant role to Thailand's economy, GDP and employment rate, etc. A summary of the findings of the systematic review process can be found in table 2

The systematic literature review highlights only a few studies on Knowledge Management in Thailand and no published research on Knowledge Management in Thai SMEs in manufacturing industry. However, it is evident that Knowledge Management has a positive impact on Thai SMEs. The aim of this study is to identify current Knowledge Management practice in Thai SMEs within the manufacturing sector and to examine how employees in the organization capture, share and store their knowledge together with their perceptions about Knowledge Management. In particular the research will focus on 2 research questions:

- Q1: How is Knowledge Management practice in the manufacturing sector in Thailand impacted by the size of an SME?
- Q2: How does the role an employee has within Thai manufacturing SME's influence their perceptions of Knowledge Management practice?

### **3. Research methodology**

A questionnaire was developed and used in this study. A questionnaire approach was selected because it can address multiple topics, draw clear comparisons, and is ideal for online implementation (Nardi, 2014). Other benefits of adopting a survey are low cost in time and budget and lack of interview bias (Gillham, 2008). Additionally, there are various related studies that have used questionnaire approach such as Salojarvi et al (2005) which studied Knowledge Management and growth in Finnish SMEs by collecting data from 108 SMEs from different fields in Finland. Edvardsson (2009) also conducted survey research in 222 Icelandic SMEs investigating change strategy and effect of Knowledge Management in SMEs over the period of 2004 – 2007.

The purpose of this questionnaire being to investigate similarities and differences in common Knowledge Management practice in Small and Medium Enterprises (SMEs). The questionnaire used in this study was developed in line with the guidelines recommended by Sommer, R. and Sommer, B. (2002) and Gillham (2008). Pilot tests were used to make sure it was well-written, interpreted correctly and manageable. Following the pilot, the questionnaire was finalised and improved based on feedbacks. Then, survey questionnaires were distributed to SMEs in the manufacturing sector in Thailand between July and December 2015. The questionnaire was sent out to participants using both the online survey software, Qualtrics, and paper based versions depending on participants' preference. The questionnaire was made available in both Thai and English language. In total, there were 311 respondents from within 20 Thai manufacturing SMEs. The sample size of 20 is small compared to the total number of manufacturing SMEs in Thailand. However, care has been taken to recruit participants from various business sectors to represent SMEs in Thai Manufacturing to ensure a representative sample (see table 3).

The questionnaire consists of 3 parts with 31 questions. Part 1 captures general information relating to the company (7 questions). Part 2 is concerned with current Knowledge Management practices within the organization addressing themes including capturing knowledge, sharing knowledge and storing knowledge. Participants can make suggestions (23 questions) and recommendations to open ended questions in Part 3.

**Table 2:** Summary of literature review

Item	Authors	Title	Year	Main Finding
1	Choochote, Kitimaporn	Knowledge Management Strategy for SMEs	2013	This paper proposes that there is no relationship between knowledge management processes and SMEs' sales performance. There are 2 factors that affect the results which are 1) The understanding of Knowledge Management in SMEs 2) During study period, there was a boom in the automotive industry economy in Thailand leading to the conclusion that sales are independent from management tools and techniques.
2	Pooncharoen, Nattachet	Knowledge Creation of SMEs in the Lower Northern Thailand	2013	Knowledge creation is unique and product oriented among different industries in SMEs in Lower Northern of Thailand and knowledge creation activities are mostly conducted at individual level.
3	Supyuenyong, Varintorn ; Islam, Nazrul ; Kulkarni, Uday	Influence of SME characteristics on knowledge management processes	2009	This study classifies SMEs characteristics into 5 groups and links them with Knowledge Management process. SMEs characteristics included are: 1) Ownership and Management structure 2) Customers and markets 3) Systems, processes, and procedure 4) Human Capital Management and 5) Culture and Behavior. 4 case studies provide evidence that 'ownership and management structure' and 'cultural and behavior' characteristics have a more positive impact on the Knowledge Management process than any other characteristic.
4	Supyuenyong, Varintorn; Swierczek, Fredric	Knowledge Management Process and Organizational Performance in SMEs	2011	This study examined the relationship between Knowledge Management process and organization performances in individual/project level and enterprise level. The outcome shows that most Knowledge Management processes have a positive impact on specific performance or overall performance. The findings support SMEs in investing in Knowledge Management.
5	Supyuenyong, Varintorn ; Islam, Nazrul ; Kulkarni, Uday	Knowledge management practices in Thai SMEs: Influence of SME characteristics on knowledge management processes	2007	There is Knowledge Management approach in Thai SMEs. However, KM activities are different from those in large organizations. Based on 2 case studies, circulating and using knowledge is shown to be of more benefit to SMEs as management structure and cultural aspects seem to favour on internal knowledge transfer.

#### **4. Finding and analysis**

This section will present the data captured from the questionnaire. Section 5 will discuss these findings and present some conclusions. The first part of questionnaire captured general information about the participants. The actual names of the companies have been removed. In total 8 small companies and 12 medium companies participated. Table 3 provides details on their business sector and number of employees.

Table 3: Participant details

Small Sized Company			Medium Sized Company		
Name	Employees	Business Sector	Name	Employees	Business Sector
Company 1	21	Automotive	Company 9	60	Automotive
Company 2	24	Electronic Device	Company 10	60	Packaging
Company 3	25	Material and Machinery	Company 11	66	Material and Machinery
Company 4	26	Packaging	Company 12	82	Material and Machinery
Company 5	32	Packaging	Company 13	110	Electronic Device
Company 6	40	Other	Company 14	120	Electronic Device
Company 7	41	Packaging	Company 15	159	Material and Machinery
Company 8	43	Automotive	Company 16	162	Packaging
			Company 17	166	Electronic Device
			Company 18	184	Automotive
			Company 19	200	Packaging
			Company 20	200	Food & Beverage

Figure 1 illustrates the roles of the questionnaire respondents within the organization. Total number of respondents are 311 employees. 10.6% of respondents are in a managerial position with non-management operations staff accounting for 89.4%.

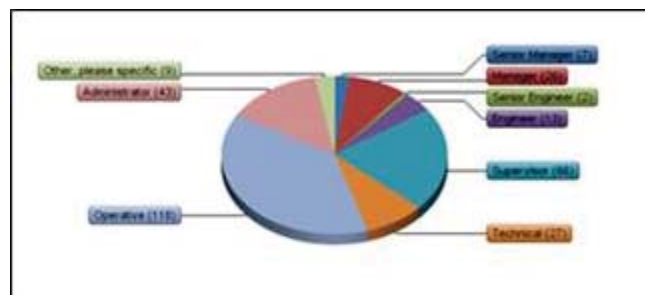


Figure 1: Organisational roles of the respondents

Figure 2 depicts how employees consider the status of Knowledge Management in their organisation. It can be seen that over 70% of staff consistently consider their organization to have a formal Knowledge Management approach with a written policy or strategy for Knowledge Management. Moreover, over 90% reported that Knowledge Management helps them solve problems and challenges providing an overall benefit to their work with only less than 10% responding that Knowledge Management did not help them and caused an extra workload.

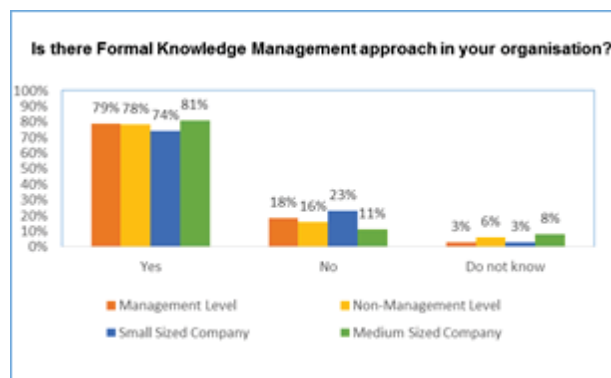


Figure 2: Knowledge management approach in organisation

Table 3b below presents current Knowledge Management practice within the organisation from the employees' viewpoint. It can be seen that employees are encouraged to participate in every aspect of Knowledge Management i.e. capturing, sharing and storing knowledge. Encouragement for storing knowledge is slightly less than for capturing and sharing knowledge.

**Table 3b:** Employees perception on organisation encouragement on knowledge management activities

	Answer	Management Level	Non-Management Level	Small sized Firm	Medium sized Firm
Does your organisation encourage employees to participate in Capturing Knowledge?	Yes	70%	65%	60%	69%
	No	30%	35%	40%	31%
Does your organisation encourage employees to participate in sharing knowledge?	Yes	79%	69%	66%	72%
	No	21%	31%	34%	28%
Does your organisation encourage employees to participate in storing knowledge?	Yes	61%	60%	53%	66%
	No	39%	40%	47%	34%

Tables 4 and 5 present the frequency with which knowledge is shared together with details of how it is shared both within and outside the organisation. It can be seen that there is little difference in the frequency with which knowledge is shared among management and non-management staff. The only difference is that management level staff are more likely to share their knowledge during informal meetings whereas non-management level staff are more likely to share knowledge at formal meeting. Furthermore, in the comparison between small and medium organisations it seems that small sized companies are sharing knowledge less frequently than medium sized company. Almost 20 % of small sized company employees report never sharing their knowledge.

**Table 4:** The comparison of frequency and how knowledge is shared by management and non-management level staff

	Management Level	Non- Management Level
Frequency of sharing knowledge within organization	Daily 33%	Daily 28%
	Once a month 27%	Once a week 26%
	Once a week and Less than once a month 18%	Once a month 19%
Frequency of sharing knowledge within organisation outside organization	Daily 33%	Daily 25%
	Once a week 24%	once a month 21%
	Once a month 21%	Once a week 20%
How to share knowledge within organization	Conversation / verbally	Conversation / verbally
	Informal meeting	Paper based document
	Paper based document and Formal meeting	Formal meeting
How to share knowledge outside organisation	Conversation / verbally	Conversation / verbally
	E-mail	E-mail
	Paper based document	Paper based document

**Table 5:** The comparison of frequency with which knowledge is shared and how it is shared in small and medium sized firms

	Small sized Firm	Medium sized Firm
Frequency of sharing knowledge within organization	Once a month 26%	Daily 34%
	Daily 21%	Once a week 32%
	Never 19%	Once a month 17%
Frequency of sharing knowledge within organisation outside organisation	Once a week 24%	Daily 28%
	Daily and once a month 22%	Once a month 20%
	Less than once a month 16%	Once a week and Never 18%



	Small sized Firm	Medium sized Firm
How to share knowledge within organisation	Conversation / verbally	Conversation / verbally
	Paper based document	Paper based document
	Informal meeting	Formal meeting
How to share knowledge outside organisation	Conversation / verbally	Conversation / verbally
	Paper based document	E-mail
	E-mail	Paper based document

Figures 3-5 depict the biggest barriers to Knowledge Management activities from an employees' perspective. It can be seen that, more than 50% of employees in both management and non-management roles and small or medium companies believe lack of clear Knowledge Management guidelines on Knowledge Management is the key barrier to capturing knowledge. While the biggest barrier for both sharing and storing knowledge is lack of time.

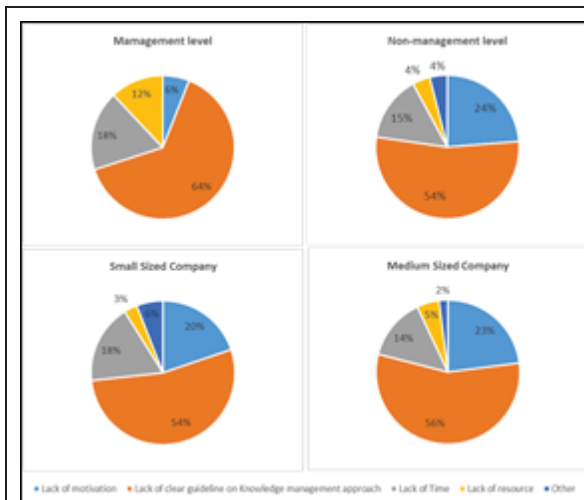


Figure 3: The biggest barrier to capturing knowledge



Figure 4: The biggest practical barrier to sharing knowledge

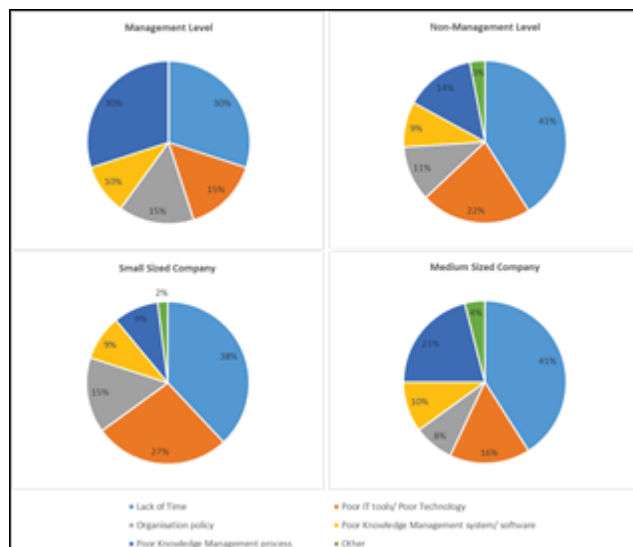


Figure 5: The biggest practical barrier to storing knowledge

Figure 6, highlights some differences of opinion regarding the biggest cultural barrier to sharing knowledge. Just under half of employees in management roles think the greatest barrier to Knowledge Management is extra workload compared to just over a quarter of non-management staff.

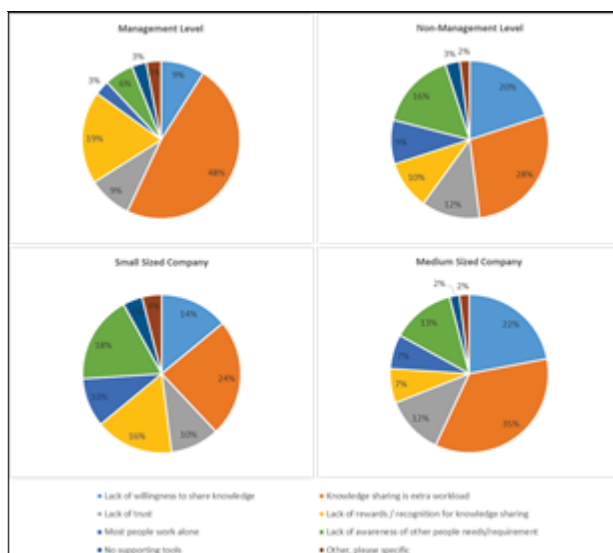


Figure 6: The biggest cultural barrier to sharing knowledge

### 5. Discussion and conclusion

This section will describe the findings from the survey in relation to the two research questions stated at the end of section 2: Q1 How is Knowledge Management practice in the manufacturing sector in Thailand impacted by the size of an SME? Q2: How does the role an employee has within Thai manufacturing SME’s influence their perceptions of Knowledge Management practice.

The findings of this study show that Knowledge Management implementation is widespread within Thai SMEs in the manufacturing sector. Figure 2 shows that more than 70% of all employees report a formal Knowledge Management approach in their organisation. This is a surprisingly high percentage considering the lack of references and research publications which focus on Knowledge Management practices in Thai SME’s. Generally, management level staff perceive their organisations are encouraging staff to participate in Knowledge Management activities slightly more than non-management staff perceive (table 3b). Also, employees in medium size companies are perceived to be more encouraging than small sized companies. This reflects a top-down management strategy where management level staff are more encouraged by company policy or strategy than non-management staff. Likewise, most medium sized firms have a more systematic management structure so it is easy to communicate and encourage staff to participate in any company activities.

From table 4, it is clearly seen that there is no significant difference between management and non-management in Knowledge Management practice. The frequency of sharing knowledge is the same, which is daily. The only difference is that managers share their knowledge more in informal meeting unlike non-management level who share knowledge in formal meetings. This could be because most management in SMEs are the owner or founder of their company and therefore their work and business are an intrinsic part of their lives. When size differences are considered medium sized organisations most frequently share their knowledge daily whilst small organisations mostly share knowledge on a weekly or monthly basis. Almost 20% of all small firms report never sharing knowledge among themselves. This could be due to the fact that many small firms are family businesses and would prefer to keep their unique knowledge only within their family. Also, that some staff feel that no one else can do their job therefore they feel no requirement to share knowledge.

Additionally, barriers to Knowledge Management activities were explored with the biggest barrier in capturing knowledge being identified as lack of clear guidelines. Figure 3, illustrates that lack of motivation is another main barrier in capturing knowledge but only amongst the non-management group, management do not perceive lack of motivation as a barrier. This reflects the fact that management are responsible for implementing the policies. They understand and are committed to the overall company Knowledge Management strategy. In contrast non-management staff may need a little more encouragement and motivation to capture knowledge. When company size is considered Figure 3 shows the biggest barriers to capturing knowledge is similar. Lack of clear guidelines on Knowledge Management approach is the biggest barrier, followed by lack of motivation and



lack of time. When it comes the sharing knowledge (Figure 4) the biggest barrier to sharing knowledge irrespective of role within the company is lack of time. Nevertheless, management highlight organisational policy as another barrier in sharing knowledge (24%) whilst only 11% of non-management staff are concerned with this barrier. Another interesting finding is that Knowledge Management systems or software are not raised as a concern amongst management level staff but are clearly an issue for non-management staff. This may be because management are focused on company policy and strategy and perhaps not the day to day operational tools for achieving them. Whilst general employees are focused on day to day tasks. Over 50% of medium sized companies report lack of time as their biggest barrier in sharing knowledge with over 40% of small companies facing the same problem. This may be because medium sized companies have expanded quickly to accommodate more demand leaving employees with less time to share their knowledge. Also, medium sized company employees state less issues with organisational policy than small sized company as they need to have a proper policy to manage a larger organisation.

Figure 5 shows that the biggest barrier to storing knowledge for both management and non-management staff is lack of time, accounting for 30% and 41%, respectively. The main difference between management and non-management staff is that managers are more aware of poor Knowledge Management processes as a barrier. Thus confirming that that management focus on policy and strategy compared with non-management staff. Furthermore, non-management highlight poor IT tools and technology as a barrier to a much greater extent than management staff due to the fact that they are responsible for undertaking the tasks on a daily basis and need the correct supporting tool. The biggest barrier in small and medium sized companies is also lack of time. One difference between small and medium sized organisations is that small companies report poor IT tools and Knowledge Management processes as being more significant barriers than medium sized companies. This may be because small sized companies have limited resources to invest in technology and developing processes than medium sized companies.

There are surprising results in Figure 6 between the cultural barriers perceived by management and non-management staff. Management staff perceive the biggest cultural barriers to be extra workload and lack of rewards whilst non-management identify 'lack of willingness to share knowledge' as the greatest barrier. When comparing results from small and medium sized companies it appears that medium sized companies are less willing to share and are more concerned about extra workload than small sized companies. This may be due to staff in small companies building strong relationships and trust with each other. The concerns over increased workload in medium sized companies are similar to their concerns raised in figure 4 relating to the biggest practical barrier to Knowledge Management again suggesting that medium sized companies resources are over stretched compared to small companies.

This paper is based on the results obtained within Thai SMEs in manufacturing factor. Currently further investigation of current KM practice in UK SMES in manufacturing sector is being carried out which will allow comparisons to be drawn and lessons learnt between Thailand and The United Kingdom. This further work will make use of quantitative analyse to gain a better understanding of Knowledge Management practices in SMEs.

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