

Critical Factors for Knowledge Management Implementation in State-Owned Enterprises

ปัจจัยสำคัญในการนำการจัดการความรู้เข้ามาปฏิบัติในรัฐวิสาหกิจ

โชคดี เลียวพานิช

Chokdee Liophanich

อาจารย์ ดร. ประจำคณะวิทยาศาสตร์และเทคโนโลยี มหาวิทยาลัยอัสสัมชัญ

Lecturer, Vincent Mary School of Science and Technology, Assumption University

Abstract

Knowledge management (KM) enables an organization to gain a competitive advantage by exploiting its knowledge efficiently. To accomplish this, the organization needs to understand critical factors in KM implementation. The purpose of this study was to explore and investigate the critical factors that influence knowledge management implementation in the state-owned enterprises. The qualitative research by multiple case study was used to study the KM practices in the holistic perspective. An in-depth interview was employed to obtain the insight from the policy makers and practitioners of four state-owned enterprises. Triangulation of sources was implemented from multiple interviewees, internal documents, and researcher's observations. The four critical factors and their attributes emerged from the content analysis, namely, individuals, management, KM activities, and organizational context. Practitioners and policy makers can apply them for effective KM strategic planning.

Keyword: Knowledge management, Knowledge management implementation, Critical factor, State-owned enterprise

บทคัดย่อ

การจัดการความรู้ทำให้องค์กรมีความได้เปรียบในการแข่งขัน โดยการใช้ประโยชน์จากองค์ความรู้อย่างมีประสิทธิภาพ เพื่อให้บรรลุวัตถุประสงค์ดังกล่าว องค์กรจะต้องเข้าใจถึงปัจจัยสำคัญในการนำการจัดการความรู้เข้ามาปฏิบัติ วัตถุประสงค์ของงานวิจัยนี้เพื่อที่จะสำรวจและสืบค้นปัจจัยที่มีอิทธิพลต่อการนำระบบการจัดการความรู้เข้ามาปฏิบัติในรัฐวิสาหกิจ การศึกษาใช้การวิจัยเชิงคุณภาพแบบหลายกรณีศึกษาเพื่อที่จะศึกษาวิธีการปฏิบัติด้านการจัดการความรู้แบบองค์รวม และใช้การสัมภาษณ์เชิงลึกเพื่อที่จะได้รับองค์ความรู้ที่ลึกซึ้งจากผู้บริหารและนักปฏิบัติของรัฐวิสาหกิจสี่แห่ง โดยใช้แหล่งข้อมูลแบบสามเส้าจากผู้ให้สัมภาษณ์ที่หลากหลาย เอกสารภายในองค์กร และการสังเกตการณ์จากนักวิจัย ผลการวิจัยพบปัจจัยสำคัญสี่ประการและคุณลักษณะของแต่ละปัจจัยจาก

การวิเคราะห์เนื้อหาได้แก่ ปัจเจกบุคคล ผู้บริหาร กิจกรรมเคเอ็ม และบริบทองค์กร ซึ่งผู้บริหารและนักปฏิบัติสามารถนำปัจจัยเหล่านี้ไปใช้เพื่อประสิทธิผลของการวางแผนกลยุทธ์การจัดการความรู้

คำสำคัญ: การจัดการความรู้ การนำการจัดการความรู้ไปปฏิบัติ ปัจจัยสำคัญ รัฐวิสาหกิจ

1. Introduction

The high competition and world's complexity drive organizations to find ways to gain a competitive advantage, while workers must become smarter rather than working harder to provide new products and services over the rivals (Dalkir, 2005; Geisler & Wickramasinghe, 2009). Knowledge management (KM) is one of that. Managing knowledge is not just for storing it into a silo in order to retain intellectual assets in an organization, rather KM will nurture knowledge through the organization resulted in utilizing knowledge for business processes, then enhancing service quality, making an innovation to satisfy customers and subsequently increasing revenues and profits (Huang, Quaddus, Rowe, & Lai, 2011; Sucahyo, Utari, Budi, Hidayanto, & Chahyati, 2016; Tuamsuk, Phabu, & Vongprasert, 2013).

KM is multidiscipline and can be viewed from many perspectives, at least business, management, organizational science, cognitive science, and technology. Undoubtedly tons of KM definitions were found from extensive literature (Dalkir, 2005; Geisler & Wickramasinghe, 2009). KM focuses on knowledge, both explicit and tacit form, as the important resource to create its value through KM processes of retaining, creating, sharing, and utilizing knowledge to make an organization grow sustainably so that knowledge can flow between people across an organization, with the assist of technology, culture, structure (APQC, n.d.; EC-Council, 2003; Dalkir, 2005; Frost, 2012; Geisler & Wickramasinghe, 2009; Hasanali, 2004; McInerney & Koenig, 2011) .

KM is implemented in an organization to institutionalize any KM practices, and accomplishing this requires many factors in assorted perspectives (Huang & Lai, 2012; O'Dell & Hubert, 2011). This article commences with a discussion about critical factors for KM implementation in the organizations. Second, it proposes the research design to accomplish the research objectives. Then the findings of this study are presented, discussed, and validated in the light of KM literature. Finally, the conclusion is offered with the practical implications, then further research.

1.1 Critical Factors for KM Implementation

Abukhader (2015) explored KM implementation in large-sized service organizations of Saudi Arabia in terms of KM tools and methods, critical success factors, and causes of KM needs. As a result, leadership and strategy formulation, and KM processes are the top critical success factors. Akhavan & Pezeshkan (2014) analyzed ten cases from various industries to discover critical failure factors in each stage of KM cycle. The most important factors were lack of KM-oriented culture in organization, lack of commitment and support of top

management for KM, inability of KM team for distinguishing organizational relations, lack of sufficient involvement of workers, weak usability of KM system. Crnjar & Dlacic (2014) surveyed large and medium-sized hotel enterprises in four categories: methodology, technology, organization, and human capital, and resulted in several variables that influenced KM implementation, but the most important variable is motivating and educating employees. Gonzalez & Martins (2014) studied 78 companies in the Brazilian automotive industry by five organizational constructs: human resources development, teamwork, organizational culture, organizational structure, and development and knowledge absorption. They argued that in the KM process, IT deployment should not outweigh the organizational context. The eight factors of organizational context were suggested for consideration in a KM process as follows: problem solving and incremental improvement, individual learning, proactivity of employees and a lean organizational structure, primary knowledge and shared identity, initiatives to obtain external knowledge, employee development, innovative strategy, and information system. Huang, Gardner, & Moayer (2016) proposed a framework for KM practice in which encompasses four key elements: culture and supportive environment, organizational structure, leadership, organizational routines, and organizational memory.

State-owned enterprise (SOE) is “A business that is either wholly or partially owned and operated by a government” (BusinessDictionary, n.d.). Thailand has 58 state-owned enterprises, making 2.7 trillion baht of revenues and 230 billion baht of profits, in which their operations influence the country’s economy (State Enterprise Policy Office, n.d.). In order to improve the competitiveness of the SOE, the state enterprise performance appraisal (SEPA) is implemented under seven sections of criteria, and the knowledge management is the fourth of them (State Enterprise Policy Office, 2013).

Based on a literature review, the research on KM implementation was found in various industries, varied sizes of organizations, national and multi-national companies, yet in the SOE it is quite limited, despite its playing a key role in the country’s economy. Hence, it is worthwhile to conduct a research on KM implementation in this context to fulfill the gap.

The aim of this research is to understand the factors that make KM implementation effectively by exploring the KM practices in state-owned enterprises in Thailand. This study investigates to understand the phenomenon occurred in the four SOE cases to indicate their similarities or outstanding by using the multiple case study analysis approach (Stake, 2006).

2. Research Methodology

A qualitative research based on multiple case study was used in this study which intended to study the overall spectacle in depth of how organizations practiced KM. Hence, the case study is suitable for how and why inquiry in which comprehensive understanding is required (Hartley, 2004; Yin, 2009). A purposive sampling

method was applied to obtain organizations which have experiences in KM implementation for at least seven years. The organizations were large size, the number of employees above 4,000 people, where several offices dispersed around the city or country. According to Eisenhardt (1989), the appropriate number of cases is between four and ten. Thus, four cases were used because of time and resource condition. Therefore, making the result applicable across organization types (Eisenhardt, 1989), this research maximized a variation (Given, 2008) of those cases from different sectors: transportation, bank, infrastructure, and energy. To reach potential organizations, the researcher asked the interviewees to recommend other organizations (Given, 2008).

Interviewees were directly related to KM programs including policy makers and practitioners. These were deputy managing director, assistant managing director, director and members of KM department, director of IT department, KM facilitator, representing the high-level management, middle-level management, practitioner, to ensure that the insight came from a whole perspective of KM practice. A number of interviewees for each organization were vary depending on their convenience, four from three organizations and eight for one organization, totalling twenty people.

2.1 Data Collection

An in-depth interview was used to collect data to gain insight from interviewees (Given, 2008), where a set of open-ended questions were used. Although questions were prepared in advance as a guideline, additional interviewee's opinions were accepted to comprehend the content. Interviewees were asked to express their experiences about KM practices and KM success factors. Prior to the interview date, the researcher studied basic information of the organization under study from its official website, and interview questions were sent to interviewees in advance, allowing them to fully prepare information. The interviews were recorded with prior consent. The duration of each interview ranged from three to four hours. Internal documents such as presentation slide, organization's yearly report, KM master plan were collected to be used as additional evidences.

2.2 Data Analysis

The recorded interviews were transcribed and reviewed to remove ambiguities and errors. Several stages of content analysis were carried out systematically and iteratively (Berg, 2004). Through deliberately reading the transcripts, initial codes were opened for the parts of them in which embodied the respondents' concepts. The initial codes and transcripts were revisited to integrate, separate until themes, categories, subcategories were crystalized. The following criteria were used to identify themes:

1. Each factor supported by interviewees of two or more organizations.
2. Interviewees strongly emphasized on that factor.
3. Interviewees provided several examples on each factor.
4. Outstanding factor in case of one supporting organization.

The triangulation of sources was implemented from multiple interviewees, internal documents, and researcher's observations (Yin, 2009). The extant literature was used to accommodate data analysis. The interviewees' details and their organizations were detached from the data analysis to keep privacy.

3. Findings and Discussions

Four main factors have emerged from the data analysis, which have influenced the KM practices in the cases: 1.Individuals, 2.Management, 3.KM activities, and 4.Organizational context. These factors are described and validated in light of the KM literature in the following section.

3.1 Individuals

Individuals are a subject in which knowledge is originated. Thus, the individual deserves to pay attention to make KM more effectiveness (Rechberg & Syed, 2014). This study found two factors affecting KM practice, namely individual characteristics and KM awareness and understanding.

3.1.1 Individual Characteristics

Recent studies in the area indicated that individual's attributes, demographics influence KM implementation about the way workers create, share, and use information (Detlor, et al., 2006; Huang & Lai, 2012; Rechberg & Syed, 2014). This study correlates with that view and found some individual characteristics namely: generation, generation gap, job category, curiosity, sharing mind, and volunteer.

An interviewee mentioned that "Knowledge hoarding is not a matter since age average in our organization is GenY. Additionally, a young generation, after being trained about KM facilitator's course, created and updated information on the knowledge portal, set up team members to drive KM without thinking that as an extra job; in reverse, they feel enjoyment. They, as an engineer, also simplified and decorated KM master plan to share in the organization. This would be a lifestyle of this generation and job category." Professionals lean towards knowledge sharing to co-workers than support and administrative staff (Detlor, et al., 2006). That is, age has an impact on knowledge sharing (Marouf & Khalil, 2015).

Age differences also impede knowledge sharing (Ragsdell, 2009). One case organization pointed out that since there is a wide generation gap in our organization, communication among young and old needs to be concerned. However, we implemented a dialogue to them, making them become a good listener to each other, mutual respect as an organizational value can complement to this.

"A factor that drives a KM program forward quickly, is volunteer mind and curiosity, in which we brought those together to form a volunteer network to learn and work together. If they are learning separately, it won't be amplified and add value to the organization. Hence, we gathered those in a community of practice" mentioned by an interviewee. Curious people are positive to knowledge creation (Hussain, Lucas, & Ali, 2004).

3.1.2 KM Awareness and Understanding

All the interviewees asserted that KM awareness and understanding of workers throughout an organization were vital to the KM practice. Organization's size and hierarchy were barriers for communication and affected employees' KM understanding. A study also has found that organization characteristics such as size and structure also affect KM implementation (Huang & Lai, 2012).

A recent study indicated that KM awareness and understanding significantly were grounds for a KM practice; a lack of the two factors may not suppose effective knowledge sharing, generating, or even usage (Rechberg & Syed, 2014). A recent survey of 342 KM executives was found that too little understanding of strategic value of KM is one of the biggest hurdles in KM implementation (KMWorld, 2016).

Crnjar & Dlacic (2014) and Oliver & Kandadi (2006) advocates that workers would be constantly informed about how they and the organization will benefit from KM. Many respondents expressed that to make workers aware of the importance of KM, communication and education must be provided, success stories and evidences about KM must be collected and publicize to workers. This finding is in line with previous research (APQC, 2011; Hasanali, 2004) that stories is valuable in conveying KM concepts and benefits to employees concretely.

3.2 Management

Management plays a significant role to support KM implementation (Connelly, Zweig, Webster, & Trougakos, 2012; Suchahyo, Utari, Budi, Hidayanto, & Chahyati, 2016). Management can support KM activities by providing essential resources (Bishop, Bouchlaghem, Glass, & Matsumoto, 2008).

3.2.1 Management Support at All Levels

The findings of this study confirm a view in KM literature (Bishop, Bouchlaghem, Glass, & Matsumoto, 2008; Chong, Chong, & Wong, 2007; KPMG, 2003; Lee, Shiue, & Chen, 2016) that top management support is a crucial factor in KM programs. Additionally, just the senior management is not enough, middle and front level managers are also important to knowledge culture evolution, lack of their support may cause KM programs to fail (Oliver & Kandadi, 2006). This study also asserted that all levels of management are vital through KM practices.

3.2.2 Management Roles

Management is a crucial factor in a KM practice since its action leads to any behavior in an organization. Management should play roles as follows: support resources and policy, act as a role model, act as a chief knowledge officer (CKO), involvement, and recognition.

The majority of the respondents stated that management must give precedence and support, also they must be a role model such as knowledge sharing, joining KM events, and importantly involving in KM activities. Additionally, a senior management must act as a CKO to empower KM programs. These concretize the value of

KM by the management. Other studies indicated a similar view that top management support influenced knowledge sharing by valuing, rewarding employees who have shared knowledge, and management should be a role model for the wanted behavior (Hasanali, 2004; Lee, Shiue, & Chen, 2016). A study of APQC (2011) found that executive role models made KM engagement productively. More than support, senior management involvement expresses to employees that knowledge sharing is worthy to the organization (Oliver & Kandadi, 2006). In reverse, without management involvement will become a barrier in KM implementation (Storey & Barnett, 2000; Suchahyo, Utari, Budi, Hidayanto, & Chahyati, 2016). Employee recognition by senior management can encourage them to contribute in KM programs (Oliver & Kandadi, 2006). Also, management should be a part of communication during a KM initiative (KPMG, 2003).

3.2.3 KM Awareness and Understanding for Management

Although management is a key factor to drive KM, before that, we need to persuade them to get involved. This study reveals that management persuasion is an antecedent on management support which requires persuasion strategy. Therefore, some of the organizations under study found that if the management did not understand KM, they would not know how to support those activities. This becomes a barrier in a KM initiative. A study indicated a similar view that unless top management realizes KM, they might not support KM activities effectively (Bishop, Bouchlaghem, Glass, & Matsumoto, 2008).

It is argued that gaining management support requires persuasion strategy. All the respondents agreed to persuade and call for the management attention by several ways continuously. One of the interviewees mentioned that “It is hard for the management to understand and realize about KM benefits which requires time and effort before it shows effects. Managers may feel that they lose subordinates in involving KM activities.” It is hard to compute knowledge’s benefits into a number, therefore demonstrating the management a good true story about KM is a powerful way to visualize and engage them (APQC, 2011; McInerney & Koenig, 2011).

3.3 KM Activities

Circulating knowledge through an organization, KM activities are required for employees to act with knowledge for each other, these need knowledge conversion activities and supporting tools.

3.3.1 Knowledge Conversion Activities

Several methods for knowledge conversion (Nonaka & Takeuchi, 1995) were used by the organizations under study, which are classified into two categories:

1. Knowledge sharing: KM day, seminar, outdoor meeting, coaching, mentoring, keynote speaker by expert, community of practice (CoP), dialogue, knowledge contest, knowledge sharing session.
2. Knowledge capture: before action review (BAR), after action review (AAR), one point lesson (OPL), one point knowledge (OPK), one point article (OPA), QC story, best practice.

These methods allow knowledge to be captured and transferred to others. Among various KM activities, there are many considerable factors found by this study.

Continuous Activity and Embedding to Routine: Some respondents expressed that KM was not a one-time process. KM activities' continuity and embedding them to routines were significant factors to make the knowledge grow and circulate in the organization sustainably (Oliver & Kandadi, 2006).

Extra Job: All the respondents stated that most employees felt that KM activities were extra jobs, in which the organizations must consider. Taking workers out of the regular working process made their managers lose man power, while employees wasted time and energy for joining KM activities. They questioned that what do they get in return? Some respondents expressed that organizations must consider appropriate time when organizing KM activities. Other studies also indicated that adding KM activities to routines without time allocation made a negative condition that obstructs knowledge sharing (Huang, Gardner, & Moayer, 2016; KPMG., 2000; Oliver & Kandadi, 2006). Thus, an organization must allocate time for participating KM activities such as learning, knowledge sharing, and innovating (KPMG, 2003; Oliver & Kandadi, 2006).

Usefulness: All the interviewees emphasized that if KM activities could show their usefulness to employees, they would cooperate with those activities. Individuals will be willing and engage in KM activities when they support and benefit their working processes (Rechberg & Syed, 2014; Robinson, Carrillo, Anumba, & Al-Ghassani, 2005; Storey & Barnett, 2000). To accomplish this, designing KM activities must consider their usefulness as a goal rather than just retaining knowledge; otherwise, employees will do for just finishing and then it will be useless for both individuals and organization. Many respondents stated that KM will be sustainable and beneficial when workers do any KM activities because they are useful to their works. This finding is in line with previous research that KM will reach its goal once employees share by their own demand (Bishop, Bouchlaghem, Glass, & Matsumoto, 2008; Hasanali, 2004).

Age Difference: An age difference was found to be a barrier in knowledge sharing in some organizations under study. For example, a senior worker holds that he has more experiences than a junior, while a junior holds that he is more modernized. As a result, they do not listen to each other, which affects knowledge exchange (Ragsdell, 2009).

3.3.2 Various Tools

All the interviewees emphasized that information technology (IT) is, though not all, a notably crucial KM success factor. It urges workers to manage knowledge easily throughout KM activities, and to reduce a barrier of geographical location. Extant literature in KM also stated that IT was an indispensable tool in KM practice in order to catalyze KM processes such as knowledge organization, retrieval, dissemination, and sharing. Though human is an important factor, IT is an enabler to make KM more efficiently, without IT or too much

focus causes a negative result (Hasanali, 2004; Huang, Gardner, & Moayer, 2016; Jain, 2007; Oliver & Kandadi, 2006; Sucahyo, Utari, Budi, Hidayanto, & Chahyati, 2016).

No matter whether IT tool or manual tool, it must provide a variety to match many forms of knowledge, styles of users, and nature of works. Since the organizations under study are large enterprises which have various businesses and different offices around the country in many geographical condition, in order to serve those needs, they require various tools to adapt to those contexts.

Therefore, many characteristics for tools were found by this study: usability, context adaptability, searchability, accessibility, ease of use, standard, response time, and social media.

Usability: This finding is in line with previous studies (Hasanali, 2004; Razmerita, Kerchner, & Nielsen, 2016; Rechberg & Syed, 2014; Storey & Barnett, 2000) that perceived usefulness of adopted tools, delivering a profitable content, can promote employees to use the system, hence an organization should take care of individual needs when designing or deploying the IT systems.

Context Adaptability: Organizations under study represent a large organization where there are many functional units, dispersed around geographical locations in different conditions, in other words, different contexts. Thus, interviewees emphasized that tools must be context adaptability. KM tools and activities must align to an individual, team, department, job or their contexts. Otherwise, it will become a boring task and useless to those who implemented them.

Standard / Searchability / Accessibility: Some respondents suggested that templates can standardize the way people collect and store knowledge into the knowledge management system (KMS), and resulting in searchability, allowing employees to search stored knowledge easily and be useful to their tasks. To accomplish this, many organizations in this study offered the full text search which is an important feature of a KMS. Stored knowledge is useless until it is in hand of users (Davenport & Prusak, 2000). Most respondents asserted that accessibility must be in consideration, especially mobile applications which allow employees in various places to access the stored knowledge anywhere, anytime, while they can capture once knowledge is happening before they forgot (Oliver & Kandadi, 2006).

Ease of Use / Response Time: Moreover, ease of use and response time are factors in which most respondents expressed that were important to facilitate employees to exploit the KMS. One respondent experienced that hard to remember passwords in accessing the KMS frustrated many users, leading to finally another easier but secured method was implemented. Another respondent mentioned that a user interface for our KMS was derived from popular social media which were familiar to employees.

Social Media: Even if social media is a general tool for communication, it cannot be looked over for being a KM tool. Interestingly, two organizations under study applied popular social media, namely, Line and Facebook for community of practice (CoP), allowing its members to communicate, exchange information, gather

problems to serve customers (Hussain, Lucas, & Ali, 2004). Significantly, it flattens a hierarchy which brings a problem direct to the responsible people, no matter of what ranks they are (Rechberg & Syed, 2014). Additionally, it allows employees and the management to communicate with each other, reducing a gap of hierarchy which is a barrier in a large organization.

3.4 Organizational Context

Organizations need to provide a context that facilitates knowledge sharing (Detlor, et al., 2006; Rechberg & Syed, 2014). This study found three factors about KM environment: explicit policy and strategy, organizational structure, and knowledge culture.

3.4.1 Explicit Policy and Strategy

All the organizations had an organizational policy to drive KM such as KM master plan and action plan. Many interviewees emphasized that if the organization wanted to sustain KM and the final goal was an organizational learning, just a KM training plan under the human resource department was not enough; a long-term plan and KM strategy must be established to respond the business strategy. Other studies indicated a similar view that a common vision and formal policies were needed for KM implementation to enhance knowledge sharing behavior (Detlor, et al., 2006; Hasanali, 2004; Huang & Lai, 2012; Storey & Barnett, 2000).

3.4.2 Organizational Structure

The findings correlate with the view that a KM implementation aims to flow information and knowledge throughout an organization vertically and horizontally, so it should eliminate the organizational boundaries between employees to work together (Al-Alawi, Al-Marzooqi, & Mohammed, 2007; Huang, Gardner, & Moayer, 2016; Huang & Lai, 2012; Storey & Barnett, 2000; Suchayo, Utari, Budi, Hidayanto, & Chahyati, 2016). Some of the organizations under study were found that the large size of organization with the hierarchal structure inhibited communication and knowledge sharing.

Most of the organizations organized a structure into three aspects: KM steering committee, KM office, and KM network. A KM steering committee was established so that members came from every unit in order to work across departments. To empower the committee, a vice president was appointed as a chief knowledge officer (CKO). A KM office was set up to coordinate any KM business. However, this office is not supposed to do all KM businesses, instead it works as a center to coordinate about KM matters. Knowledge is managed by individuals who work with it, to hand off the KM activities, a KM network was established to distribute tasks to the units of organization. To empower this, a KM facilitator was assigned to drive and facilitate KM. This structure conforms to the APQC's study cited in Hasanali (2004).

3.4.3 Knowledge Culture

Culture, forms a context of how society members interact with each other, may be mentioned by many levels including culture and climate at the organization, unit, and team level that influence KM practices (King W. R., 2008). In this study, many factors were found to encourage knowledge culture.

Incentive, Reward, Recognition: Value can be represented by reward and recognition, using them appropriately is one of the KM critical success factors (APQC, 2011; Bishop, Bouchlaghem, Glass, & Matsumoto, 2008; Detlor, et al., 2006; Rechberg & Syed, 2014; Robinson, Carrillo, Anumba, & Al-Ghassani, 2005). They are accelerators in changing culture (Hussain, Lucas, & Ali, 2004; Jain, 2007). All the organizations under study used both financial and non-financial incentives in different situations and objectives. Initiation and short term, financial rewards seem to be effective to stimulate employees sharing or creating knowledge to reach an organization's target in a KM development indicator. Some respondents stated that making workers understand and take in KM in brief time was quite difficult, so rewards were used to persuade them at kickoff, but the main goal that must be aware of and step into, was the usefulness of knowledge exchange. The majority of the respondents asserted that peer recognition and management recognition made the employees proud to be the contributors, and resulted in KM engagement.

Emotional Climate: The right climate is necessary for knowledge sharing (Jain, 2007; King W. R., 2008). The majority of the respondents in this study agreed that creating emotional climate was an important factor to reduce resistance of extra job in KM activities. Relaxation and enjoyment make employees happy and want to join a KM activity willingly. An informal activity and outdoor meeting are examples of those. Literature indicated a similar view that fun could encourage people to share knowledge (O'Dell & Hubert, 2011).

4. Conclusion

The critical factors for KM implementation emerged from the data analysis in this research are summarized in Table 1.

Table 1 Critical factors for KM implementation in SOE

Individuals	Individual Characteristics	Generation, Generation Gap, Curiosity, Sharing Mind, Volunteer, Job Category
	KM Awareness and Understanding	Lacking KM Awareness, Organization's Size, Dispersed Workplace, Communication and Education
Management	Management Support at All Levels	
	Management Roles	Support Resource and Policy, Role Model, Involvement, Recognition, Act as CKO
	KM Awareness and Understanding for Management	Management Persuasion
KM Activities	Knowledge Conversion Activities	Knowledge Sharing, Knowledge Capture, Continuous Activity, Embedding to Routine, Extra Job, Usefulness, Age Difference
	Various Tools	IT, Usability, Context Adaptability, Standard, Searchability, Accessibility, Ease of Use, Response Time, Social Media
Organizational Context	Explicit Strategy and Policy	
	Organizational Structure	Hierarchical System, Organization's Size, KM Steering Committee, KM Office, KM Network, KM Facilitator
	Knowledge Culture	Incentives, Reward, Recognition, Emotional Climate

To implement KM effectively, it is fundamental to establish KM awareness and understanding for both employees and the management, especially in the KM initiative. Management roles must take into account in leading knowledge sharing behavior by being a role model, activity involvement, and employee recognition. Various KM activities and tools should be provided for knowledge capture and sharing, therefore context adaptability, usability must be in consideration. An organization have to provide an appropriate context to encourage employees in knowledge sharing such as financial and non-financial incentives, and relaxation emotional climate. It is recommended that a success story collector would be set up to collect any useful cases, success stories in conducting KM, these can visualize the KM usefulness to employees and management. A large size of organization and dispersed location must be taken into account because they are barriers for communication. Information technology, social media, and KM network should establish to reduce this gap.

This research has discovered four main factors: individuals, management, KM activities, and organizational context with their attributes, based on KM practices in the four large state-owned enterprises. These factors should be considered as the critical factors when implementing KM to ensure success and reduce

failure of KM programs. Practitioners and policy makers may bring this for planning KM strategy, and designing KM framework.

Much KM literature has contributed to the KM implementation in various types of industry, but this research, in particular, was conducted in the state-owned enterprise context in a holistic manner. The findings may be applied to other large enterprises since the case organizations of this study have more than 4,000 employees. The case selection strategy is the limitation for this research since there are four organizations from four industries in Thailand, the application to other countries must be in consideration. Thus, future research should be conducted in other industries and countries for generalization. Moreover, factors and their attributes should be verified by qualitative and quantitative studies.

References

- Abukhader, S. M. (2015). Exploring knowledge management implementation in large-sized service organizations: Saudi Arabia as a case. *Knowledge Management Research & Practice, 14*(3), 412-421.
- Akhavan, P., & Pezeshkan, A. (2014). Knowledge management critical failure factors: a multi-case study. *VINE: Journal of Information and Knowledge Management Systems, 44*(1), 22-41.
- Al-Alawi, A. I., Al-Marzooqi, N. Y., & Mohammed, Y. F. (2007). Organizational culture and knowledge sharing: critical success factors. *Journal of Knowledge Management, 11*(2), 22-42.
- APQC. (2011). *Engagement and participation for knowledge sharing and collaboration*. APQC.
- APQC. (n.d.). *What is knowledge management?* Retrieved from <https://www.apqc.org/what-knowledge-management>.
- Berg, B. L. (2004). *Qualitative Research Methods for the Social Sciences* (5th ed.). Boston: Pearson.
- Bishop, J., Bouchlaghem, D., Glass, J., & Matsumoto, I. (2008). Ensuring the effectiveness of a knowledge management initiative. *Journal of Knowledge Management, 12*(4), 16-29.
- BusinessDictionary*. (n.d.). Retrieved from <http://www.businessdictionary.com/definition/state-owned-enterprise-SOE.html>.
- Chong, C. W., Chong, S. C., & Wong, K. Y. (2007). Implementation of KM strategies in the Malaysian telecommunication industry: An empirical analysis. *Journal of Information and Knowledge Management Systems, 37*(4), 452-470. doi:10.1108/03055720710838524.
- Connelly, C. E., Zweig, D., Webster, J., & Trougakos, J. P. (2012). Knowledge hiding in organizations. *Journal of Organizational Behavior, 33*, 64-88.
- Crnjar, K., & Dlacic, J. (2014). Critical success factors for knowledge management implementation in hotel enterprises. *Proceedings of the Management, Knowledge and Learning International Conference 2014* (pp. 977-984). ToKnowPress.

- Dalkir, K. (2005). *Knowledge management in theory and practice*. Amsterdam: Elsevier Butterworth-Heinemann.
- Davenport, T. H., & Prusak, L. (2000). *Working knowledge: How organizations manage what they know* (2nd ed.). Harvard Business Review Press.
- Detlor, B., Ruhi, U., Turel, O., Bergeron, P., Choo, C. W., Heaton, L., & Paquette, S. (2006). The Effect of Knowledge Management Context on Knowledge Management Practices: An Empirical Investigation. *Electronic Journal of Knowledge Management*, 4(2), 117-128.
- EC-Council. (2003). *Knowledge management*. New York: OSB Publisher.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Frost, A. (2012). *Knowledge Management Definition*. Retrieved from <http://www.knowledge-management-tools.net/knowledge-management-definition.html>.
- Geisler, E., & Wickramasinghe, N. (2009). *Principles of knowledge management: Theory, practice, and cases*. New York: M.E.Sharpe.
- Given, L. M. (Ed.). (2008). *The SAGE Encyclopedia of Qualitative Research Methods*. Los Angeles: SAGE Publications.
- Gonzalez, R. V., & Martins, M. F. (2014). Mapping the organizational factors that support knowledge management in the Brazilian automotive industry. *Journal of Knowledge Management*, 18(1), 152-176.
- Hartley, J. (2004). Case study research. In C. Cassell, & G. Symon (Eds.), *Essential guide to qualitative methods in organization research* (pp. 323-333). London: SAGE Publications.
- Hasanali, F. (2004). Critical success factors of knowledge management. In M. E. Koenig, & T. K. Srikantaiah (Eds.), *Knowledge management lessons learned: What works and what doesn't*. Information Today Inc.
- Huang, F., Gardner, S., & Moayer, S. (2016). Towards a framework for strategic knowledge management practice Integrating soft and hard systems for competitive advantage. *VINE Journal of Information and Knowledge Management Systems*, 46(4), 492-507.
- Huang, L. -S., & Lai, C.-P. (2012). An investigation on critical success factors for knowledge management using structural equation modeling. *International Conference on Asia Pacific Business Innovation and Technology Management*, (pp. 24-30).
- Huang, L.-S., Quaddus, M., Rowe, A. L., & Lai, C.-P. (2011). An investigation into the factors affecting knowledge management adoption and practice in the life insurance business. *Knowledge Management Research & Practice*, 9(1), 58-72.
- Hussain, F., Lucas, C., & Ali, M. (2004, May). Managing Knowledge Effectively. *Journal of Knowledge Management Practice*, 5.

- Jain, P. (2007). An empirical study of knowledge management in academic libraries in East and Southern Africa. *Library Review*, 56(5), 377-392.
- King, W. R. (2008). Questioning the conventional wisdom: culture-knowledge management relationships. *Journal of Knowledge Management*, 12(3), 35-47.
- King, W. R., Marks, P. V., & McCoy, S. (2002, September). The most important issues in knowledge management. *Communications of the ACM*, 45(9), 93-97.
- KMWorld. (2016). The state of knowledge management: 2016-17 KMWorld Survey. *The knowledge management buyers' guide*. Information Today Inc. Retrieved from [http://www.kmworld.com/WhitePapers/KMWhite Paper/KMWorld-Fall-Buyers-Guide-and-the-2017-State-of-KM-Survey_6694.aspx](http://www.kmworld.com/WhitePapers/KMWhite%20Paper/KMWorld-Fall-Buyers-Guide-and-the-2017-State-of-KM-Survey_6694.aspx).
- KPMG. (2003). *Insights from KPMG's European knowledge management survey 2002/2003*. KPMG Knowledge Advisory Services.
- KPMG. (2000). *Knowledge Management Research Report 2000*. KPMG Consulting.
- Lee, J. C., Shiue, Y. C., & Chen, C. Y. (2016). Examining the impacts of organizational culture and top management support of knowledge sharing on the success of software process improvement. *Computers in Human Behavior*, 54, 462-474.
- Marouf, L. N., & Khalil, O. E. (2015). The Influence of Individual Characteristics on Knowledge Sharing Practices, Enablers, and Barriers in a Project Management Context. *International Journal of Knowledge Management*, 11(1), 1-27.
- McInerney, C. R., & Koenig, M. E. (2011). *Knowledge management (KM) processes in organizations: theoretical foundations and practice*. Morgan & Claypool.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.
- O'Dell, C., & Hubert, C. (2011). *The new edge in knowledge: how knowledge management is changing the way we do business*. John Wiley & Sons.
- Oliver, S., & Kandadi, K. R. (2006). How to develop knowledge culture in organizations? A multiple case study of large distributed organizations. *Journal of Knowledge Management*, 10(4), 6-24.
- Pukkila, J. (2009). *Critical success and failure factors of knowledge management implementation in a large multinational company*. Master Thesis, Lappeeranta University of Technology.
- Ragsdell, G. (2009). Participatory action research: a winning strategy for KM. *Journal of Knowledge Management*, 13(6), 564-576.

- Razmerita, L., Kerchner, K., & Nielsen, P. (2016). What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication. *Journal of Knowledge Management*, 20(6), 1225-1246.
- Rechberg, I., & Syed, J. (2014). Knowledge Management Practices and the Focus on the Individual. *International Journal of Knowledge Management*, 10(1), 26-42.
- Robinson, H. S., Carrillo, P. M., Anumba, C. J., & Al-Ghassani, A. M. (2005). Knowledge management practices in large construction organisations. *Engineering, Construction and Architectural Management*, 12(5), 431-445.
- Stake, R. E. (2006). *Multiple case study analysis*. New York: Guilford Press.
- State Enterprise Policy Office. (2013). *State enterprise performance appraisal: Criteria and method*. Retrieved from <http://www.sepo.go.th/sepa/contents/17>.
- State Enterprise Policy Office. (n.d.). *The role of c. The development of enterprises*. Retrieved from <http://www.sepo.go.th/content/67>.
- Storey, J., & Barnett, E. (2000). Knowledge management initiatives: learning from failure. *Journal of Knowledge Management*, 4(2), 145-156.
- Sucahyo, Y. G., Utari, D., Budi, N. F., Hidayanto, A. N., & Chahyati, D. (2016). Knowledge management adoption and its impact on organizational learning and non-financial performance. *Knowledge Management & E-Learning*, 8(2), 387-413.
- Tuamsuk, K., Phabu, T., & Vongprasert, C. (2013). Knowledge management model of community business: Thai OTOP Champions. *Journal of Knowledge Management*, 17(3), 363-378.
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). SAGE.