

# An Investigation of Knowledge Management Implementation: Multiple Case Study in Mobile Telecommunication Industry

Chokdee Liophanich

School of Science and Technology/Information Technology Department, Bangkok, Thailand

Email: chokdee@scitech.au.edu

**Abstract**—This research aims to explore and investigate significant issues in knowledge management implementation in mobile telecommunication industry. Literature review was conducted to find interesting issues for identifying interview questions. The qualitative research was used with multiple case study approach and in-depth interview in order to gain empirical knowledge by the holistic manner of real-life events. Four main mobile telecommunication operators were selected to collect cases. Interviewing was taken place to directors, senior managers, practitioners, specialists who plan, supervise, lead, or participate for the knowledge management project. Internal documents of these organizations were collected to use additionally for analysis. Cases were analyzed by cross-case analysis. The study found many significant issues that can be classified into the following themes: executive support, information technology, continuous activities, implementer's attitude, incentive, budget and branding approach in an explanatory manner. The result allows practitioners, planners to plan and be an intensive guideline on conducting a knowledge management project, especially in mobile telecommunication industry or large enterprises. This will increase knowledge management implementation effectiveness. Additionally, it is a ground work for further research in knowledge management implementation.

**Index Terms**—Knowledge management implementation, Mobile telecommunication

## I. INTRODUCTION

Knowledge has long been recognizing as an important thing for living. Therefore, managing knowledge in an organization has just been interesting recently since it can make one a competitive advantage in the complex world.

In the globalization, one has to confront with uncertainty of business environment, high competitiveness, and jumping from production-based to knowledge-based economy. Thus, knowledge management becomes acceptable as a competitive weapon among this situation [1].

Knowledge-oriented companies are eager to capture experiences from their workers. Knowledge management system is a way to distribute knowledge from employee

to employee. It also helps a multi-site enterprise whose tasks are dispersed in many locations and different time zones [2].

Telecommunications companies such as British Telecom, AT&T, and Deutsche Telekom have set up a position chief knowledge officer to ensure effective programs on knowledge management. It shows that these companies value intellectual assets [2].

While organizations are interested in knowledge management to increase their competitiveness sustainably, it requires to study on critical success factors for KM implementation. These will ensure that important issues, activities, and practices are paid attention during design or implementation of KM [3].

Due to a subjective manner of KM, there is no common or standard ways in a KM practice [4]. Moreover, KM is related to many parts, people in an organization that make managing knowledge quite complex. To make it more confident to design and implement KM right the way, many issues should be provided that allows implementers pay attention to them.

Ref. [5] states that system thinking where a learning organization should be the main discipline. Likewise, implementing KM project should be viewed as a system. Even though, there are many literatures studied about critical success factors for KM implementation, quite limited works studied in the holistic manner. In this research, it conducts qualitative research by multiple case study approach in order to gain insights of experts in the holistic manner. This will focus on mobile telecommunication industry. It will be a guideline and clarify how implementers should conduct their KM projects.

### *Interview Questions*

In order to explore and investigate how organizations implement their knowledge management projects, interview questions are set up as a scope of the interview.

The interview questions are as follows

- What is a background of KM system in the organization?
- How is the KM important for the organization?
- What are the objectives of the KM system of the organization?
- How did the organization initiate the KM project?

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- What is the KM process of the organization?
- What is the experience gained from doing KM project?
- What is the budget for driving KM project?
- What are the problems / obstacles in implementation? How do you solve these problems?
- What are the success factors?
- What do you think about the future development of KM in the organization?
- How do the KM systems support the daily operation of the organization?

From literature review in [1], [6], [4], [3], [7], [8], [5], there are a number of interesting issues for designing and implementing KM as shown in the Table I. The researcher uses these issues as a guideline during research procedure.

TABLE I. CONSIDERATION ISSUES FOR KM IMPLEMENTATION

Benchmarking	Knowledge structure	Processes and activities
Business strategy	Leadership	Resources
Clarity of vision and language	Link to economics or industry value	Reward systems
Communities of practice	Management leadership and support	Senior management support
Egalitarian climate	Measurement	Shared vision
Employee empowerment	Mental models	Strategy and purpose
Employee involvement	Motivational aids	System thinking
Human resource management	Multiple channels for knowledge transfer	Team learning
Information systems infrastructure	Organizational infrastructure	Teamwork
Knowledge audit	Organizational structure	Time allocation
Knowledge-oriented culture	Process management	Top-management leadership and commitment
Knowledge map	Physical environment	Training and education

## II. RESEARCH DESIGN

### A. Research Methodology

Even though there are many researches and theories in various perspectives on knowledge management, they do not cover in the holistic manner. This research intends to study the overall phenomenon in depth of how organizations implement their knowledge management. This will be a guideline for whom to make planning of knowledge management. The qualitative research by case study research strategy is chosen, together with in-depth interview as an instrument.

Case study allows us “to explore issues in depth and in context” and enable to generate theory by assembling intensive evidence collectively. It helps to comprehend the circumstance that dominates behavior or processes [9].

The case study is the empirical study where the study will gain real experience through the real circumstance; it is not just basic opinion or feeling [10], [11]. This study tries to extract the insight of participants then reflect their knowledge.

The case study research does not intend to particularize the case. As Ref. [10, p. 15] states,

“Case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a “sample,” and in doing a case study, your goal will be to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization).”

Moreover, case study may find out the decision making of “why they were taken, how they were implemented, and with what result” [10, p. 17]. By a case study, we can learn and understand about the case. Although a case makes us understanding about a phenomenon but particularity is not an aim, rather the understanding of one case is a step of studying in other cases in order to generalize beyond it.

The case study is appropriate for

- A problem to which comprehensive understanding in social or organizational processes is needed. And there are too many variables to investigate in which standard experimental or survey is not suitable [9].
- A problem to which “how” or “why” inquiry is interesting [10].

### B. Case Selection

In multiple-case design, case selection is important to demonstrate differences and similarities over the contexts and processes [9]. Hence, the purposeful sampling is used to select case organizations.

The concept of purposeful sampling is selecting information-rich cases that allow learning in depth according to the research purpose; that contrasts to statistical sampling [11], [12].

By purposeful sampling, there are no exact principles for the sampling strategy and sample size. They depend upon the study’s objective, resources available, research questions, credibility, usefulness, etc. The point is that we can gain valuable cases for in-depth study then achieving to the research objective [12].

### C. Case Selection Criterion

Criteria for case selection to this research are based on

- Industry sector
- Potential organization:
  - Public company
  - No. of Employee
  - Years of conducting business
- Maturity of KM practices by years of experience

The research selects industry sector on the mobile network operator whose organization’s knowledge is important to the business.

In Thailand, there are main mobile network operators as follows: Advanced Info Service Public Company

Limited (AIS), Total Access Communication Public Company Limited (DTAC), True Corporation Public Company Limited (TRUE), CAT Telecom Public Company Limited, TOT Public Company Limited.

Research cases come from four mobile network operators. Details of the organizations are shown below:

- Number of employees is from 6,900 to 20,000 people.
- Total revenue on year 2011: from 52,950 to 126,437 Million Baht.
- They are public company limited.
- They have been practicing KM for 6-10 years.
- Conducting business for 27 years or more.

These are almost the players in the field of Thailand mobile network operators. Selected cases are high potential and valuable for this research.

#### D. Data Collection

Data was collected by an “in-depth interview” to gain insight from an informant. Ref. [13] suggests 7 stages for interview as follows: the matizing, designing, interviewing, transcribing, analyzing, verifying, and reporting.

Interview questions were designed to be a guideline. It made an interview keeping track on the research objective. The interview questions were reviewed by the field’s expert.

In an interviewing, a number of informants were invited to give answers in particular perspectives. This ensures that the answers obtained insight by the direct practitioner, including director, manager, project leader, senior officer, engineer, IT expert, KM expert.

Interviewing duration was around 3-4 hours. There was taped during conversation by respondent’s consent.

The interview was transcribed analytically. It includes categorize, summarize, and interpret the conversation. Additionally, multiple sources of evidence were gathered and used to increase accuracy of finding [10], including KM project document, presentation slide, whitepaper, brochure of the organization. Then transcription was sent to be checked by the interviewees for reliability and validity of interpretation.

#### E. Cross-Case Analysis

The objective of case analysis is to interpret collected data in order to find deep understanding, commonality as well as dissimilarity across the cases by using cases as evidence for assertion [14], [15].

Cross-case analysis is an ongoing and iterative process. Ref. [15], [16], [14] have demonstrated framework for cross-case analysis where this research has applied. Collected data are rearranged systematically by coding, categorizing, sorting. These allow comparisons, seeking for differences, finding of patterns and themes, seeing trends according to the research questions. Synthesis was done to draw conclusions.

### III. FINDING AND DISCUSSION

#### A. Executive Support

All interviewees agreed unanimously that supporting and foreseeing importance of KM by high level executives are the most important success factor to knowledge management. These findings conform to the views of many literatures [6], [7], [17], [18]. Therefore, Ref. [4] extends that managements at all levels are needed for a culture development.

Conversely, all interviewees stated that if executives do not understand principles and benefits of knowledge management (in other words, not buy in), it becomes an obstacle that there will be no supporting to knowledge management activities.

#### B. Information Technology

Information technology or information system was viewed as a vital factor to knowledge management success by all respondents. It allows faster and more convenient in knowledge accessibility, knowledge sharing, and knowledge exchange.

The following main applications were found to facilitate KM. A web portal is a single point of access for employees to store, access information. An eLearning is used to accelerate learning cycle. Collaborative software brings people working together, document or ideas pass through a team online by two-way communication and then increase speed of organization’s interaction. A blog is a tool for storytelling that allows employees share their experiences to others.

Many literatures insisted this finding that technology infrastructure is one of the most critical factors for the KM success [4], [19], [7], [8]. Technology can beat barriers of time and space and help to manage large amount of information, capture, share, access knowledge [19], [2], [20].

Only availability of IT infrastructure is not enough for KM success. It must be clearly understood, accepted, proper use as well as reliable, accurate and user-friendly that play role in KM efforts. [21], [7].

Conversely, a lack of technology can lead to failure [22]. Although KM is not information technology, Lack of it will be questioned in effectiveness and efficiency of KM project.

Moreover, failure does not occur by only lacking technology. Overreliance also causes to fail and that system becomes a technological exhibition [23].

Therefore, IT is not a sole success factor. IT or groupware is a tank and tunnel for storing and exchange knowledge that cannot change behavior of knowledge hoarding into knowledge sharing. Hence, implementers have to consider in social aspect too that use IT to facilitate the knowledge culture. [4], [19], [24], [8].

Aligning technology with defined KM strategy and other aspects of implementation is required and it needs supporting from a change program [23], [25].

In KM, there are several dimensions namely; technology, process, people, content, organizational structure that must be kept in mind and treat equally through the KM efforts [25], [21].

### C. Continuous Activities

Knowledge management is not one time process, rather it is an ongoing task. All informants affirmed that continuous activities are required for the knowledge management project.

KM and learning is a continuous, never-ending process [26], [27]. Keeping the KM spirit alive requires gradually incremental process and KM activities must be cultivated into core business routines to be organizational culture, not a big bang event [28], [4]. Knowledge needs constantly revised, updated, otherwise it becomes obsolete [29], [30]. Continuous participation of employees helps KM going on sustainably.

### D. Implementer's Attitude.

Organization can't learn, instead individual learns [5]. An individual is a learner who shares his knowledge. Knowledge originates in human. Human is a creator. So be it a big gear to drive the knowledge management.

All interviewees agree that building a good feeling (in other words, avoid negative feeling) to KM is a major concern. Tactics are as follows:

*Avoid feeling of extra burden:* Normally, employees have their own routines. Bringing KM activity to employees is an additional task that make one feel extra burden, causing resistance. To avoid this situation, interviewees suggest that not using the word "KM". Some use a brand to represent KM.

*Infiltrate KM through routine:* Do not hand on KM activities directly, instead infiltrate them through employee's routine job. This makes KM activities distribute to employees naturally.

*Persuasion:* Doing KM activities should be persuasion or motivation manner. Elucidating benefits of KM, voluntary, encouragement more than enforcement are good policies. Some organizations use gaming to attract for KM participation

Another literature by [31] also indicated that people are the first priority issue in KM. Effectiveness of KM implementation must concern in implementer's attitude to accept KM willingly. Dissatisfaction of implementers must be in consideration to avoid resistance to a KM project. Stimulation to share knowledge as well as sufficient incentives are good strategies to motivate people.

### E. Incentive

Although willingness to participate KM activity is expected, incentives also are indispensable. All informants point out that rewards are needed to motivate employees. These may be things or money as well as trophy, certificate, trappings. Above all, recognition is very important and valuable. Recognition by executive such as shaking hand, taking photo, salutation demonstrates high recognition and proud to staffs in doing KM. This incentive is not only perceived by the reward receiver, rather it disseminate through organization as a whole that KM participation are recognized. Ref. [32], [2] have expressed a similar view that effective incentives can encourage employees to share their knowledge.

### F. Budget

Every informant said that most of KM activities require no particular budget. A training expenditure comes from human resource development budget that already exists with the regular routine. In addition, rewards and reward ceremony also require some budgets. A public relation matter to invite employees to participate KM activities is needed. Extra money may need at the KM project initiative is an external consultant fee.

Another substantial expense comes from computer system such as hardware, maintenance fee. However, software expenses depend on types of software, some select commercial software which requires budgets whereas others select open source software that can reduce payment.

### G. Branding Approach

The prominent finding from one company is managing KM as branding. It treats knowledge as a product or service and managing KM project likes managing a brand. An organization creates brand awareness through brand identity and brand personality. Brand Identity can be achieved by creating a name and logo to represent KM website where people can visit to join in searching, sharing knowledge. A logo expresses an image of curiosity or useful knowledge source. Brand Personality is identified to express its emotion and feeling to the KM project such as sense of enjoyment, usefulness, fascination.

Marketing must be in proactive manner to make KM vivid, alive to participants. Communication to participants must be done continuously by arranging KM activities from time to time. For examples, there is a campaign to stimulate employees participating in KM activities, providing activity such as quiz game to stimulate sales volume, having a promotion depending on a festival.

This is an interesting strategy to make KM sit into employees' mind. Employees are treated as customers in which be satisfied by KM.

## IV. CONCLUSION

This study has explored and investigated important issues for KM implementation of four main mobile telecommunication organizations. Those issues include executive support, information technology, continuous activities, implementer's attitude, incentive, budget, and branding approach. The findings can be the guideline for whom are planning, implementing a KM project. This will increase an effectiveness of the project.

The researcher applied qualitative multiple case study research methodology in which allows to gain insights from the experts in the holistic manner. That is quite limit approach in this area.

Therefore, this research focused in large organizations. The result may or may not suitable to small or medium organizations. Moreover, the study selected cases from mobile telecommunication industry that further research should extend to other industries in order to generalize the theory.

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**Dr. Chokdee Liophanich** received Ph.D. degree in Computer Information Systems from Assumption University, Thailand in 2005. He is working as a Lecturer in Information Technology Department, School of Science and Technology, Assumption University. His research interests include knowledge management, knowledge management technology.