

DEVELOPMENT OF KNOWLEDGE MANAGEMENT SYSTEM: A PRELIMINARY STUDY ON FACILITIES MANAGEMENT IN MALAYSIA

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Abstract:

This paper describes the nature of facilities management and explores the implementation of knowledge management system in this area. Facilities Management is the practice of coordinating the physical workplace with the people and work of an organization; it integrates the principles of business administration, architecture, behavioural and engineering. Information and Communication Technology (ICT), continues to sit 'out on a limb' and is less well integrated into the facilities management domain compared to others. For instance, IT has been used to support the knowledge creation phase. We defined knowledge management as the deployment of a comprehensive system that enhances the growth of an organization's knowledge. Knowledge management concept has been implemented in many areas. However, no study has been done in facilities management area. One of the issues to be solved in the implementation of the knowledge management concept is the development of knowledge management system itself. The main objective of this paper is to explore knowledge management systems that will be used as a basis guideline to be implemented in facilities management in Malaysia. This system consists of five key elements; contents, technology, people, process and context that are related to each other and needed for the development of knowledge management systems.

Key words: Knowledge management, facilities management

1.0 INTRODUCTION

This paper presents the initial stage of research of the potential implementing knowledge management system in facilities management in Malaysia. The subject of the research is the organizations which provide or manage facilities or assets. Today, knowledge is identified as the crucial asset in organization and added competitive advantage compared to before (Muhammad Najib Razali & Zaharah Manaf, 2004). Yet, it is the basis of wealth but not always recognized as an asset at all. Knowledge is the result of sifting, reviewing, disseminating, sharing and discussing information. Traditionally, companies have been valued according to their tangible assets, such as property and equipment. But the intangible assets such as knowledge, brand and relationship with customer are coming into their own. Thus, new concept in organization which is knowledge management will lead the organization towards learning organization. In this case, human capital is also included in knowledge management. In order to be successful in this venture, we must seek a high standard by finding and deploying a set of human capital metrics that actually predict future organization result.

Facilities management (FM) is often seen as the management of cost-efficiency rather than as a method of achieving the multi-dimensional enhancement of business competitiveness. If the role of FM is to be recognized for the literally facilitating strategic mechanism that it represents, organizational structures must be constructed in an enabling rather than a disabling form (Micheal Pitt, 2001). For this research, some organizations are recognized as involved in facilities management even though some of them do not named themselves as facilities management companies or division. But their businesses are partly related to manage an asset or facilities. Organizations involved in this research such as local authorities, government related companies (GLC) which are appointed to manage government asset and real estate companies which run facilities management business. In Malaysia, the role play of facilities management is civil engineer, architect and property manager. However, this paper will not focusing on facilities management issues although many issues can be discussed such as what constitutes FM?, What is a facilities manager? How can the FM professionalism be enhanced? (Linda Tay and Joseph T.L Ooi, 2001).

2.0 Preliminary Study

From the observation in some of the facilities management organization in Malaysia, it is clear that there is a lack of integrating knowledge sharing for considering the likely impact and implication of organization management trends and strategic management decisions on the provision and subsequent ongoing management. In order to implement knowledge management concept in organizations, we must see the organizational structure whether it can support knowledge management. In the case of management facilities or assets, the organization's strategic intent must clearly reflect the facilities dimensions in its strategic business plans. Integrating knowledge sharing in organization must be built on creating a continuous dialogue between strategic management of core organizational development and operational management of organizational resources. The relationship between business management and the supporting role of operational property is often not properly defined at the strategic level. This often resulted in operational policies that do not clearly reflect the contribution of property assets of facilities in terms of the organization's overall performance, measures in terms if improved profitability, productivity and customer satisfaction (Danny Shiem-Shien Tien, 1999). The effectiveness of FM relies on the regular flow of information: localised information: localised information built up from the bottom of the operational structure, and organization information brought down from the core business end of the organization (Danny Shiem-Shin Then, 1999).

Some of the organizations have well equipped IT systems. However, the issue is how to deploy all the equipments. If the systems can be utilized to knowledge management systems, company policy and procedure manuals can be replaced by on-line documents that can easily be maintained and updated. According to Paul Carder (1995), a key role in the new knowledge-based FM organization will be the 'informed interface'. Taking the tasks of analyst, adviser and educator of customer, this interface role is increasingly needed between the customer and operational management and delivery service. The interface role will be required to understand and use both business and facilities information, combine to create organization-specific workplace knowledge.

3.0 Knowledge Management Strategy

Knowledge management in organization is always referred to as organizational learning. In this case, facilities management organization can suites all knowledge management strategies. From the literature review, knowledge management strategies fall into three categories which are:-

1. Knowledge acquisition
2. Knowledge retention
3. Knowledge exploitation

(Alain J. Beckett et. All, 2000)

According to Alain J. Backett, Charles E.R Wainwright and David Vance from Cranfield University and Domino UK Ltd (2000), knowledge acquisition can be required into two general ways:-

1. Obtained from outside the organization, by purchasing it, hiring experts or license patents.
2. Created inside the organization by formal research activities, and by expertise acquired through experience.

From the observation, the most suitable is no.2. It is because it can increase the value of human capital. However, the first way can be done at first stage for transferring knowledge. A few knowledge management products, such as business intelligence, and data mining systems are specially aimed at knowledge acquisition. Other systems serve the same purpose but are long establish, and so have not attracted the “new label” of knowledge management.

Alain et. all (2000) also described, the aim of knowledge retention strategy is to maintain the knowledge base of the organization. This knowledge is vital to the present performance of the organization and so must be maintained at the point of exploitation. Nonaka (1995) had described, large difference between tacit and explicit knowledge arise when examining the ease of access of this knowledge, the ability to challenge it, or the requirements for keeping it within the bounds of the organization. In knowledge exploitation aspect, they are describing in terms of sustainable

competitive advantage, because the exploitation of knowledge gained is the economic justification for the existence of any organization.

The most important strategy in creating knowledge management strategy in facilities management organization is to identify the knowledge that will be managed in a systematic way especially of high value knowledge in the company. Knowledge that is not directly related to the core competency of the organization can be outsourced. Example; in local authorities organization, they can propose a systematic way to manage all facilities provided and at the end of the day they can make a high revenue. According to Mark W. Salisbury (2003), the first step of planning the knowledge management strategy implementation is to perform knowledge analysis. Knowledge analysis is the process of breaking large bodies of subject matter into smaller and instructionally useful units. Next step is developing knowledge network and it will become a basis for underlying architecture of the resulting knowledge management system. In general, each of the general content areas from the knowledge analysis are decomposed into smaller content and if needed, these smaller content areas are further decomposed into still smaller content areas that described same content but a more detailed level. Next step is associating resources with each content area. This complete the high level preliminary design for the resulting knowledge management system by defining what resources end-users will be able to access at any given point in the system. Figure 1.0 shows a diagram process on the development of knowledge management strategy.

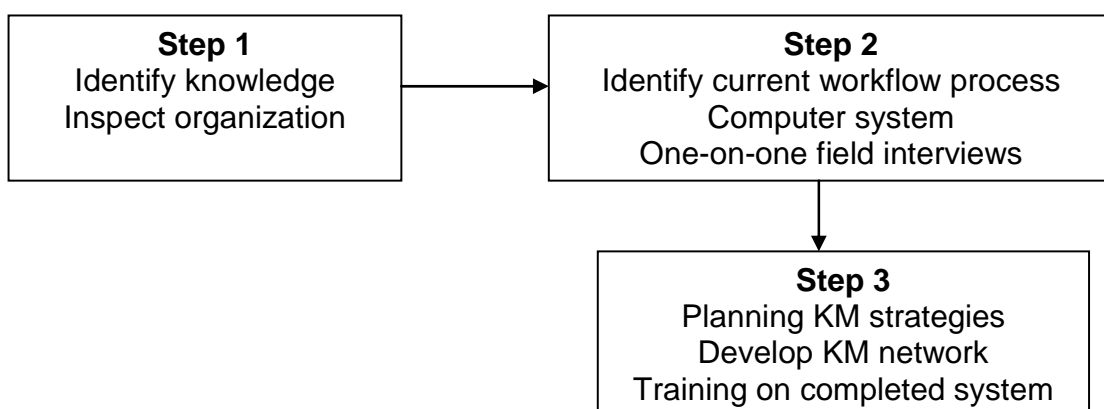


Figure 1.0: Process on Knowledge Management Strategy

Above of all, top managers should convey simple management and demonstrate that sharing knowledge is a critical requirement in day-to-day jobs. Creating new knowledge is a common responsibility for each department or group of experts to organization turn into knowledge – creating organization. According to James et al, 1995, there are three levels of management:-

- I. First- line managers, who are only responsible for operating employees because they are the lowest level in the managerial hierarchy.
- II. Middle managers, who are in charge of other managers, including, some operating employees, but they must report to senior managers.
- III. Top managers, who are the highest on the managerial hierarchy and who set the policies of the company and guide its interaction with the environment.

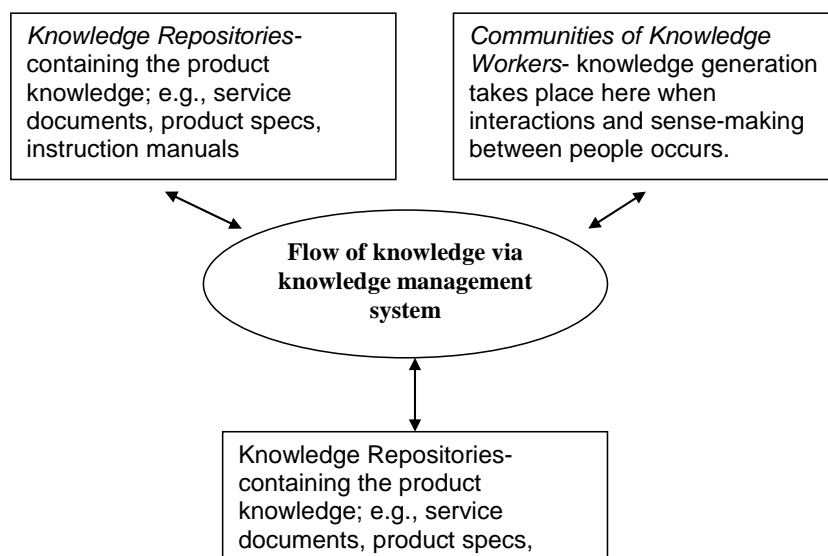
There, in facilities management organization, we must identify each level of management in the process to develop knowledge management strategy. In order to match the perceptions of all employees in different positions, the goals and the plan that are committed by all levels of employees for the knowledge management system becomes more critical issues in implementation. From the preliminary study, the critical aspect that must be seen is organization culture which focuses on two parts; knowledge sharing and the fear of innovation. Microsoft Corporation (1999) highlighted that in order for employees to be knowledgeable, they must be allowed to experiment in order to learn from failures. Employees should not be afraid of committing mistakes, and should be encourage sharing the lessons learned so that the same mistakes will not be repeated.

4.0 Knowledge Management System (KMS)

In the new millennium, we will always be reminded the important of information and communication technology (ICT). However, Fawzy Soliman & Keri Spooner (2000) believes that the successful implementation of new technologies is dependent on many factors including efficient management of human resources. Thus, knowledge management system is considering all aspects “happened” in the organization. He also reported that some firms have invested heavily in technology underpin their knowledge management strategy, but have still planned the technology

infrastructure to support and deliver the required knowledge capability. Nilmini Wickramasinghe (2003) described, knowledge management system refer to the information system adopted and designed, which efficiently and effectively leverage the collective experience and knowledge of employees to support information processing needs, as well as enabling and facilitating sense-making activities of knowledge workers; i.e. systems that actualize the knowledge architecture. She added, in practice, knowledge management has been fuelled by the rapid development of technologies; in fact the emergence of Web-based technologies has enabled and fuelled the widespread awareness and adoption of KMS in much the same way as it has had an impact on e-commerce. It is believe that KMS will also give an impact to facilities management and will create e-facilities.

In knowledge management system (KMS), Cunningham (2001), noted it is consist of three integrated components namely enterprise resource planning (ERP), supply chain management (SCM) and customer relationship management (CRM). This system will make facilities management companies become globally knowledged but locally learning. Nilmini Wickramsinghe (2003), had illustrated a diagram of knowledge architecture interface KMS (figure 1.1). The knowledge architecture is defining a KMS that supports both objective and subjective attributes of knowledge. The pivotal function underlined by the knowledge architecture is the flow of knowledge. The flow of knowledge is fundamentally enables by the KMS.



Source: Adapted from Borghoff and Pareschi (1998)

Figure 1.1: The knowledge architecture

Knowledge management system acts as repositories, storing both tacit and explicit knowledge and even goes so far as to support knowledge spiral (Nonaka, 1991). However, these systems do not support the subjective component of knowledge. These systems essentially function as an organizational memory transition to Web-based technologies faster and easier. Maier and Lehner (2000), mentioned, in practice KMS trying to cope with the following three changes in the organization:-

- I. An increasing complexity, dynamics, fragmentation and decentralization of knowledge or knowledge development
- II. An increasing complexity or organizational structures and the permanent need to change these structures and
- III. An increasing amount on non- traditional data to be manages

To develop knowledge management system, we must first create a model of knowledge management system. There are several techniques used to model knowledge. In Europe, the most common are commonKADS and Protégé 2000, the Unified Modelling Language (UML) and Multi- perspective modelling. Mohd. Syazwan Abdullah et all (2004),have described the modelling techniques and their features as listed below.

Table 1: Modelling techniques and features

| Technique | Common KADS | Protégé | Multi-perspective | UML |
|-----------------------------|--------------------|----------------|--------------------------|------------|
| K.E methodology | | | | |
| Object- oriented approach | | | | |
| Hybrid approach | | | | |
| Standard modelling language | | | | |

| | | | | |
|---------------|---|---|---|---|
| Documentation | | | | |
| Evolving | | | | |
| Domain | Medical, legal, engineering, business & up to social sciences | Medical, legal, engineering, business & up to social sciences | Medical, legal, engineering, business & up to social sciences | Medical, legal, engineering, business & up to social sciences |

Models are widely used in developing software systems including knowledge management systems. Each of above techniques is currently complementing each other in one way or another to develop better models of knowledge.

In facilities management organization in Malaysia, the models have to consider all major businesses or organizations which managing facilities or assets. Figure 1.2 illustrated a framework of initial stage of knowledge management system base on model develop by Mark Deakin (1998).

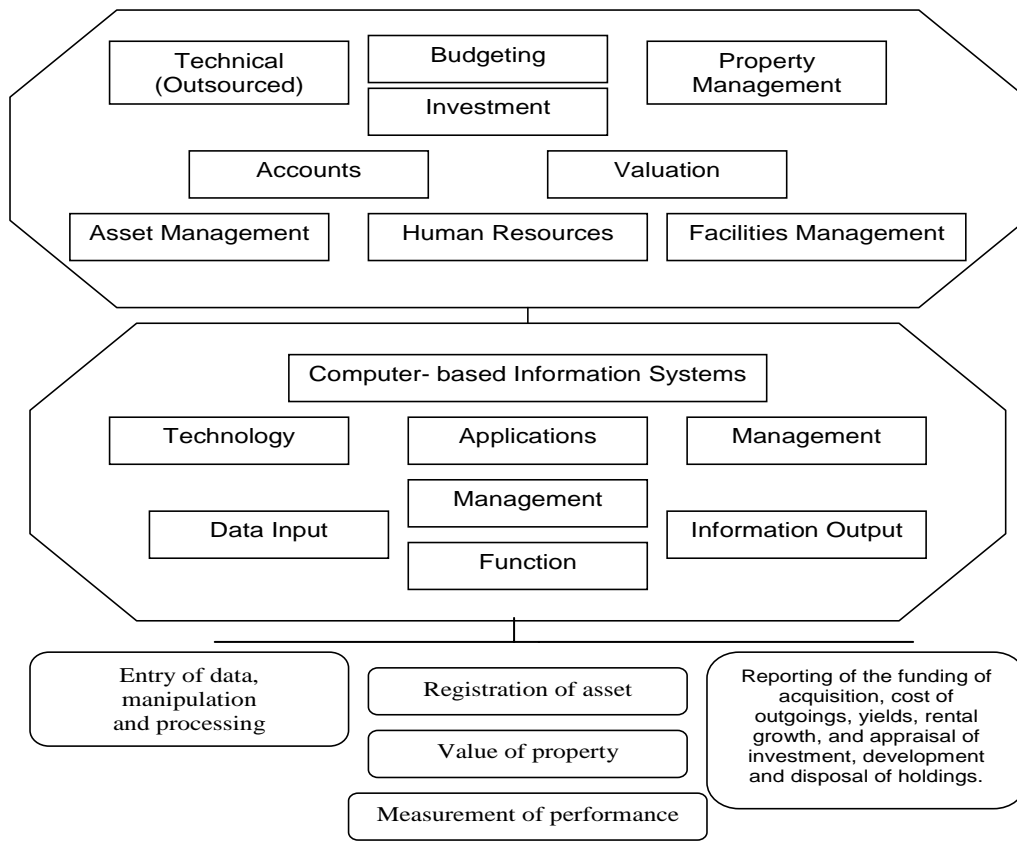


Figure 1.1: Basic model for KMS in facilities management organization

Figure 1.1 illustrates computer based information system which can be expanding to knowledge management system if the model is integrated with other department's system model. This model fits into the budgeting of expenditure, the accounts, the departments it serves and how the technology in question is applied to the management function. Mark Deakin (1998) also described, in extending the logic of the previous diagram, it draws attention to the IT applications that assist the management of facilities or assets. It draws particular attention to the data input needs for the entry, manipulation and processing of material through the registration of assets, valuation of property and measurement of performance. It also have the information which forms the output of the data entry, manipulation and processing. Computer based information system can be represented as a register of asset classifications, a set of bases, methods of property valuation and performance measurement techniques and be it through the form of an electronic filing cabinet, automated valuation of property, asset management system or performance measurement.

5.0 Implications

Knowledge management can be as a movement for organizations to change. This includes organizations involved in facilities management. KMS concepts can be very complex depending on organization and community of practice. Members of community of practice can be heterogeneous or homogeneous. Solving an organizational problem in the case of heterogeneous community of practice, use of KMS may need some modification of the general KMS commonly used (Halimah Che Hassan, 2005). Knowledge management system in facilities management organization might strengthen the revenue of organization by optimization uses of facilities or asset and modifies the industries. At the beginning, the most suitable part in facilities management to implement knowledge management system is in maintenance part. In Malaysia, as we know maintenance culture is very weak and this is related to work culture in organization.

Gary L. Adams and Bruce T. Lamont (2003), described the role of KMS are as follows:-

- I. The accessing of external technology, information and knowledge streams that the organization can utilize in the development of absorptive capacity to recombine existing resources into the new core and distinctive competencies.
- II. The coordination of internal technology, information and knowledge to aid in the development of transformative capacity, again in the effort to recombine existing resources into new core and distinctive competencies
- III. The maintenance of core and distinctive competencies.

KMS can facilitate organizational learning and innovation process. In facilities management organization, the main aspects needs to focus are service to customer, maintenance on asset and facilities and culture change in organization. Thus, this research will attempt to get an overview of the importance on knowledge management system in facilities management organization. It is believed and argued that management in general, and facilities management even more is only in beginning to understand the need for effective collaboration to extract the best from available knowledge.

6.0 Conclusions

This research is still in preliminary study stage. Thus, it only discussed a survey from various literature surveys to suite in facilities management organization. It is believed, many organizations involved in facilities management have already applied some form of knowledge management in their operations and management. What need to be done further is to look on how managing the organizations in an integrated manner can be done. This paper seeks to highlight the opportunities of implementing knowledge management system in order to see the full benefits to the organizations in the long run. Knowledge management system already implemented in various types of field thus in facilities management it should also be done. The combination of knowledge management, information and communication technology and facilities management should result in improving productivity, enhancing the organizations environment and increasing levels of innovation.

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