# DEVELOPMENT OF KNOWLEDGE MANAGEMENT STRATEGIES FOR PROPERTY MANAGEMENT COMPANIES IN MALAYSIA

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## Abstract

This paper attempts to develop a knowledge management (KM) framework concept that can be used by property management companies in Malaysia. KM is a management method that consists of people, information technology (IT) and organisational elements to capture information, which is an organisation's most valuable asset. Hence, it is believed that this study will contribute to the betterment of the real estate industry. The research findings suggest several magnitudes as well as an inclusive set of KM strategy activities that can be adopted by property management companies in Malaysia. The study, however, underpinned its findings based upon a limited number of samples. Only 16 out of 25 registered property management companies participated in the research, representing a small proportion of property management establishments that are registered under the Board of Valuers, Appraisers and Estate Agents, being the professional body that governs property management practices in Malaysia. This study proposes a KM strategies framework as a guideline for property management companies to embrace KM principles. The findings have showed that most of the strategies were significant to the property management companies in Malaysia. Nine strategies based on rankings were identified as very suitable and essential in order to ensure the success of the framework to the companies. Research in this area, which focuses on the practice of property management, is extremely rare, thus justifying its uniqueness within the existing body of knowledge.

***Keywords**: Knowledge management, Malaysia, property management companies, strategies*

## 1.0 Introduction

In Malaysia, information technology (IT) has been drafted as a major policy in terms of modernising the country. Millions of dollars have been spent to ensure this plan is achieved. The Malaysian Administration and Management Planning Unit (MAMPU) is responsible for IT development and planning in Malaysia. In IT policy, knowledge plays a significant role in ensuring the policy is successful.

Several authors have suggested that knowledge is the major part in IT policy (Abernathy, 1979; King, 1994). Basically, their frameworks stress the importance of knowledge, such as knowledge building and knowledge deployment in IT policies. Another study done by Raman (1996) on IT policies in Malaysia also potrayed knowledge as one of the mainstay policies of the five policies (promote use of IT, IT education, promoting IT applications and telecommunication infrastructure) drafted by them. Subsequently, one of the ways to make this policy successful was by implementing knowledge management systems.

Although knowledge management (KM) has been widely discussed by many academics and practitioners (Aurum, 2008; Becket, 2000; Callahan, 2000; Diakoulakis, 2004; Egbu, 2000; Civi, 2000; Grenon, 2000; Hipkin, 2001; Malhotra, 2000; Smith, 2004; Zavadskas, 2010), there is little information on KM in the real estate sector context. The few researchers who have explored the potential of the KM concept have practised in the real estate sector (Adnan, 2007; Cheong, 2006; Dixon, 2005; Fong, 2009; Hipkin, 2001; Razali, 2008; Wynn, 2007). Out of these, there is no research that has used the Malaysian real estate sector as a case study.

The KM concept has been practised in many fields such as business, human resource management, engineering, medicine and science. As such, this concept is recognised as a common concept in management, as the expertise of the work force is a critical factor that strongly influences the effectiveness and efficiency of business processes and their outcomes. According to Civi (2000), when building knowledge management systems, there is no single approach that fits all industry participants. In general, three different approaches can be observed in the industry; bottom-up, decentralised knowledge management systems, top down, centralised knowledge management systems and middle-up-down. In the real estate sector, property management roles are becoming a major source of income or revenue by collecting taxes from various sources such as rentals, property tax, rental facilities and quitting rental premises. Property management also relates to business and economic development such as asset management, building management and facility management. These sources need proper management for the purpose of customer satisfaction and more importantly as income for the country. These aspects of management will assist the country to achieve sustainable development in the long term.

In the real estate realm, KM is specifically relevant due to the knowledge intensive character of delivering services to be rendered to clients, which can demand innovative and non-repetitive processes (Adnan, 2007). Therefore, it is believed that this concept can be practically implemented in the property management fraternity, particularly in Malaysia. Whilst the concept is widely accepted in broad management, business and engineering arenas, there is limited evidence and research on its application within the boundary of property management practices.

The property market in Malaysia has shown tremendous potential as a result of the country's strong economic growth. This has positioned the Malaysian property market in the radar of investors as a lucrative market to venture in. Malaysia is ranked eighteenth in global property performance and contributes 0.7% globally (RCA, 2011). Malaysia is also listed as one of the transparent property markets in the world as a result of the good performance of its property sector (JLL, 2010). This optimistic scenario provides a positive and significant impact on the property management industry in Malaysia. As the property sector contributes significantly to the economic growth and development in Malaysia, these properties need to be properly managed to ensure that the industry is well sustained.

Based on the above premise, it is believed that the KM concept can assist property management players to perform their roles more effectively and hence positively impact the property industry.

There are limited studies that have been conducted on the concept of KM in property management. The work of (Fong, 2009) discussed the nature of property professionals' acquisition, sharing and reuse of knowledge in property management firms, while (Hipkin, 2001) looked at the implementation of KM in terms of physical asset management. In particular, (Hipkin, 2001) suggested the introduction of maintenance management information systems (MMIS), as asset management could be a part of property management activities, such as reliability centred maintenance, multi-skilling, total productive maintenance and hazard and operability studies. This requires knowledge as a part of the imminent system. Chin (1999) discussed the quality of property management in Singapore based on ISO and TQM frameworks and Li (1997) found that there were many problems in the implementation of good property management practices in this emerging property market. According to (Wynn, 2007), the property management industry has become more innovative in recent years, not least caused by the advent of the Internet and the evolution of new routes to markets.

In the context of the 'new economy' in property, Dixon (2005) highlighted major structural changes driven by globalisation as well as information and communication technology. He also stressed the diverging trend that has shifted from tangible physical assets towards intangible goods such as knowledge and information. This has also in effect reflected the nature of how real estate practices are conducted nowadays. The new economy will now take place in a globalised environment, driven by technological change in alliance with other forces (Dixon, 2005). Furthermore, real estate professionals should re-orientate themselves in a globalised world (Razali, 2008). In real estate practice as a whole, the biggest challenges are the separation between knowledge and tasks that are caused by the broad and diverse nature of the job and functions within the industry. Each of the tasks has its own characteristics and involves knowledge creation and diversification. Why does real estate practice need knowledge management strategies? Real estate practices have to take up the challenges of the new economy in order to stay viable. This paper attempts to investigate further the needs of KM in real estate, specifically in property management businesses.

In an economy where knowledge and information are becoming more vital to the extent that it will form the basis of power and prosperity, talent will be recognised as very important and a key asset to organisations. This is the concept propagated by the Knowledge economy (K-economy) that creates, acquires, adapts and uses knowledge effectively for economic and social development. In the case of Malaysia, the country realises that it cannot afford to ignore K-economy in order to achieve sustainable economic growth and to remain globally competitive (Wei, 2009). Hence, it is imperative that the KM concept is implemented in organisations in order to transform them into entities with a competitive advantage in this borderless world. Nevertheless, a KM strategy must be implemented prior to achieving the above, as it constitutes the initial level of KM itself.

The motivation for this paper is derived from the benefits to be gained from introducing the concept of KM in other areas that potentially relate to property management, especially in Malaysia. As such, this research aims to formulate KM strategies for property management companies in Malaysia. Consequently, a conceptual framework based on various literature surveys will be developed and tested among property management companies in Malaysia. This research also investigates further the needs of KM in real estate, specifically in property management businesses, by taking into account local needs and regulations. In essence, this research will determine the most dynamic knowledge management strategies for property management companies in Malaysia.

## 2.0 Information Technology and Knowledge Management: Literature Perspectives

According to Diakoulakis (2004), KM has gradually been established as a strong methodology to support business viability, competitiveness and growth. Rubeinstein (2001) defined KM as a conceptual framework for problem solving that considers problems in their entirety. In

addition, KM can be viewed as a conceptually complex, evolving, broad umbrella of issues and viewpoints (Smith, 2004).

Dixon, (2005), highlighted a from the strategic management point of view, managers should always reassess the environmental changes and seize opportunities to improve their organisational performance. In the information age, many organisations compete for shrinking profit margins in an increasingly global market (Aurum, 2007).

Gibson, (1999) added that information is critical to the management process. They further stated that the core activities and responsibilities of any corporate property managers rely on having good quality, accessible and accurate information. From the aspect of dissemination of knowledge, Almond (2001) emphasised the importance among real estate/property managers and surveyors to be experts in local market conditions. His study focused on how knowledge was disseminated and the issues impacting on this practice. Property managers should be very sensitive to the changes in the economic environment so that contingency plans can be made for the owners in terms of cash flow planning (Li, 1997). Property managers must also view property in various ways.

According to Becket (2000), Data-Knowledge_Information_Technology DKIT framework demonstrates that the exploitation of knowledge is a sustainable competitive advantage involving a number of transformational processes, such as data analysis and information communication. These processes must be managed and therefore require a strategy to guide them in order to be consistent with the mission of the organisation. This is an important principle; the mission itself defines the information that constitutes knowledge for the organisation. That is, knowledge is any information that contributes to the overall mission of the organisation and thus it is the business strategy to be pursued.

It can be observed that knowledge management has a close relationship with IT. This is because in the globalisation era, knowledge can easily be managed and retrieved by using IT tools. In other words, IT is able to assist the success of knowledge management through the knowledge management systems. Information technology is able to support all KM processes. The level of IT support and the kind of IT infrastructure needed by a consulting firm depends on its KM strategy. The core elements of suitable architecture are a central electronic repository of explicit knowledge focusing on knowledge as an object (Zack, 1999; Maier, 2003). In ensuring IT tools can function well in organisations, infrastructure for supporting IT tools is needed.

A friendly front-end and robust back-end is the basic necessity of a software tool for knowledge management. Knowledge based systems represent computer-based information processing systems that embody knowledge of a particular domain and inference capability to use the embedded knowledge in problem solving (Jenkins, 1988). **A**rchitecture of a knowledge management system by Lawton (2001). describes that electronic knowledge repositories can be used to store various forms of knowledge, such as client and customer knowledge, industry best practices and product knowledge. In addition, special IT tools can be used for indexing and retrieving documents to discover knowledge that assists in the development of ideas for new products. For example, collaboration tools provide security through encryption and authorised access and provide privacy to users to share what they want. As such, the lowest layer of this framework handles explicit knowledge, which resides in repositories as documents or other types of knowledge items, such as emails, messages and database records. Lawton (2001) also added that documents and content management tools with features for search engines and file retrieval, as well as analysis and maintenance, represent knowledge repositories. In addition, the framework also suggested the organisation of knowledge is based on a corporate taxonomy and serves as a knowledge map supported by classifying and indexing tools. By using portals, organisations able to distribute knowledge to different users and applications powered several platforms such as e-learning, competence management, intellectual property management and customer relationship management.

In knowledge management, there are several IT tools that can be exploited within the real estate business, such as a new management tool known as collaborative computing technology. This technology can accelerate and encourage changes in the corporate world, particularly real estate business. These products can perform a variety of tasks, from scheduling, project management, web based video conferencing to data storage, data sharing and supply chain management (Attaran & Attaran, 2001). In real estate, where information is crucial, the sharing of information in and between organisations is important. Thus, IT capabilities can optimally create information resources. Furthermore, it can be used at anytime and anywhere. The use of collaborative computing software can accelerate real estate companies into six major categories (Attaran & Attaran, 2002):

i. Virtual meeting. Real estate professionals can easily set up a workspace on the Web where they can share documents and discuss ideas.
ii. Teamwork. A group of geographically dispersed employees, customers and others could assemble in cyberspace and use Web-based products to accomplish a task (for example, client's information and client's requirements on property).
iii. Project management. Project teams can access a special Web site set up as a hub for the project. It could contain everything from tasks and schedules to a vast repository of engineering drawings, maps and other documents.
iv. Supply chain collaboration. Business to business (B2B) e-commerce is taking place in new business operations. It can enhance a buyer-seller relationship. This collaborative effort enables partners to work together to gain a better understanding of future products, demand and to put more realistic plans in place to effectively satisfy it.
v. Internet broadcast. Internet broadcast services can enable users to broadcast live and on-demand audio and video presentations over the Web. They can be used for training sessions, product launches, technical briefings, property shows, conferences, learning announcements, distance learning and similar tasks.
vi. Information sharing. The Web is providing new ways for companies to handle information. It has an unlimited storage capacity, thus eliminating the problem of information overload.

(Adapted from Attaran & Attaran, 2002)

The combination between knowledge management and IT can be called knowledge network. Knowledge network is a collaborative system to access information, knowledge, expertise, working procedure and social boundaries in the organisation or country.

## 3.0 Knowledge Management in Property Management

Why does the real estate practice/business need a KM strategy? Real estate practices/businesses have to accept the challenge brought about by the emergence of the new economy which is driven by globalisation and IT (Dixon, 2005). Clearly today the trend is now shifting towards more intangible goods or assets, such as knowledge and innovation. This could be so, as highlighted by Bean (2000) and Thompson (2005), whereby IT has not only changed business processes radically, but dedicated computer systems have revolutionised the control and operation of physical processes. Furthermore, in property transactions data has been available via a network of professional contacts. The jungle telegraph can work well if the real estate practitioner/surveyor has established contacts throughout the property sector and in the area in which he or she practises.

However, in many cases it can be difficult to access the required information, particularly when firms tend to be secretive or the market is sluggish (Wyatt, 1996). Thus, real estate firms need to establish their own knowledge base in their respective organisations, particularly in a tight competitive environment. All of these indicators show that real estate businesses needs to evolve in order to meet their firm's goals. In addition, Cheong (2005) had drafted a competence framework for professional real estate services **(Figure 1)**. This framework stresses the importance of knowledge as part of competence in real estate services. The framework encompasses combinations of knowledge, service property, skills, organisation, service infrastructure and technology into professional real estate services. This best practice of these combination elements will ensure the customer satisfaction.

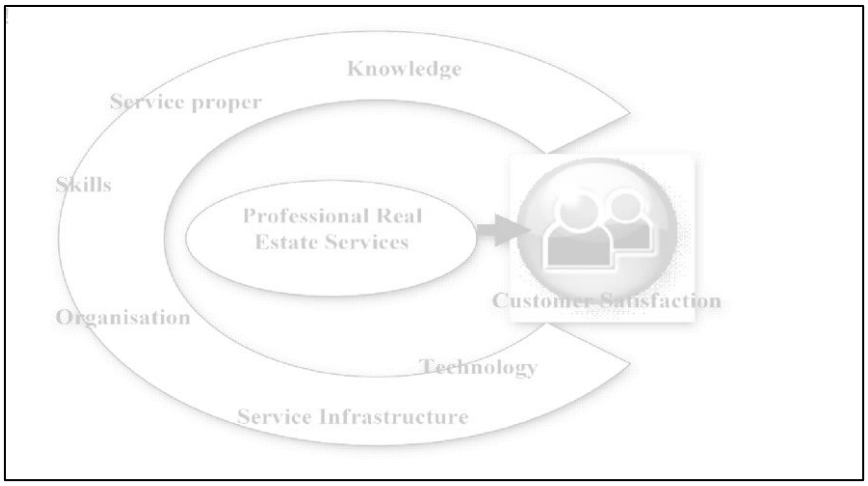


**Figure 1:** Competence Framework for Professional Real Estate Services (Cheong, 2005)

The study by McAllister (1999) has highlighted the evidence of globalisation and integration of the commercial property market in the United Kingdom, which may affect how the processes of real estate practices are conducted. On the other hand, Sheng, (2004) have provided some suggestions to integrate framework management in property management. The focus of this framework is to reconcile the demand for, and supply of, the property asset base and associated facilities for support services essential for the delivery of its core products or services. Both articles suggested some important points that stressed the significance of knowledge in real estate/property organisations. **Table 1** represents the major findings from both articles.

**Table 1**: MacAllister and Sheng and Zhou's Major Findings

| No. | Author(s) | Findings |
|---|---|---|
| 1. | MacAllister (2009) | Globalisation, integration and commercial property in the UK indicates several notables evidences: |
| | i. | Diversification |
| | ii. | High returns |
| | iii. | Liability matching |
| | iv. | Promotion of business relationship |
| | v. | Cost of diversification |
| | vi. | Risk due to management problems |
| | vii. | Taxation risk |
| 2. | Sheng and Zhou (2000) | The suggested framework for integrated property management: |
| | i. | Defining and quantifying the demand emanating from strategic business direction in terms of operational needs of facilities and support services to support core business activities. |
| | ii. | Defining the supply in terms of the necessary physical asset base and appropriate service levels from the service delivery perspective and their management over time. |
| | iii. | Matching supply to demand over time as a continuous process of maintaining relevance in terms of an appropriate physical resource to support the corporate strategic intent. |
| | iv. | Structure: organisational set-up for operational real estate provision and facilities for service management. |

| | |
|---|---|
| v. | Processes: the systems and procedure for the management of the delivery of operational assets and their associated facilities for support services. |
| vi. | Competencies: the necessary skills required for an efficient and effective delivery system - both in-house and bought-in expertise. |

Gibson (1994) believed that the relationship of property to property managers is technically challenging. It has been observed that managers focused only on the building and not the activity, while dynamic processes take place within the building. Property to them is a building that needs to be renewed, accommodation, which needs to be refurbished, and a tax liability that needs to be minimised. Thus, Gibson (1994) drafted a framework for property management to strategically address how operational property is managed on par with all other significant resources. In other words, property managers should integrate operational objectives combined with all information on property and operational and external issues. Concurrently, property managers should equally focus on how to achieve these objectives (activities, skills required and responsibilities) in conjunction with approaches to property and management. The property objectives will be achieved after the activities work in tandem, as deployed in IT **(Figure 2)**.

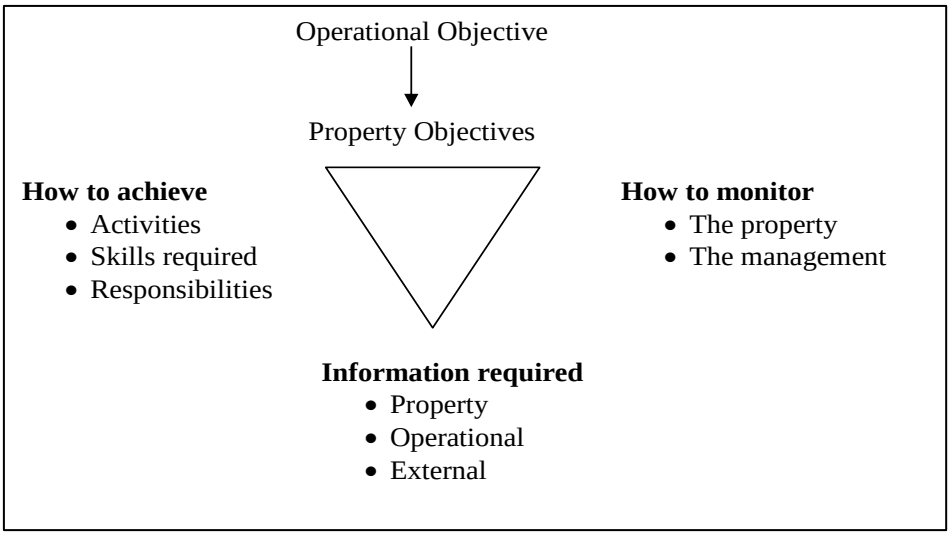


**Figure 2:** Property Management Strategic Framework (Gibson, 1994)

Real estate services, particularly the business of property management, can be acknowledged as one of the new knowledge-based industries. Thus, it is crucial to identify what property management services are, so that a cultural knowledge environment can be created in organisations. According to Krumn (2000), activities relating to the property industry have evolved from a mere side activity of the firm's owner/founder, to the creation of a separate discipline within business management and academia. The growth of corporations and the commensurate expansion of the real estate portfolio triggered the need for managerial attention being paid to matters of real estate.

In real estate businesses, the most important knowledge is local knowledge itself. Malmberg, (1996) emphasised three key issues in order for firms to be competitive:

i. localised innovation process
ii. barriers to the diffusion of knowledge
iii. attraction of outside sources of knowledge

He added that knowledge would arise largely through interactions within the local milieu. In this way, only applicable knowledge is disseminated. Some authors have defined critical performance in business in order to implement the knowledge management concept. Generally, critical performances in real estate business are based on the framework developed by Chourides et al (2003). **Table 2** provides a summary of critical performance to ensure the success of the knowledge management concept in property management

**Table 2**: Critical Performance Attributes in Knowledge Management

| **Focus** | **Critical factors** |
|---|---|
| Competitive advantage | Research the knowledge environment |
| | Develop 'parallel' KM strategy |
| | Focus on future |
| | Pursue KM as a premium strategy |
| | Need for leadership commitment and activity |
| | Appoint dedicated/specialist KM leader |
| | Develop rapid response capabilities |
| Human resource management | KM people portfolio matrix |
| | Recruit and nurture knowledge workers |
| | Measure sharing |
| | Reward sharing |
| | Communities of trust |
| | Communities of practice |
| | Best in class packages |
| | Develop inner, outer and external organisation |
| | External sourcing strategy |
| | Cut slack in workloads |
| Information Technology | Develop decision support systems |
| | Appoint KM facilitators |
| | Manage internal, external and research links |
| | Employ managed data base principle |
| | Build manage systems, internet, intranet and extranet |
| | See IT as enabler not leader |
| | Integrate IT and KM workers |
| | Reward contribution |
| | Develop measures for best practice and sophistication |
| Quality | Real quality |
| | Process simplification, work enrichment |
| | TQM values, principles, consistent and supportive |
| Marketing | Differentiate through KM |
| | Focus on innovation |
| | Identify and develop customer 'total solutions' |
| | Improve time to market skills |
| | Improve organisation velocity to respond to customer needs |
| | Post modernist emphasis |
| Finance | Management of intangible assets |
| | Adding value to shareholders |

Adapted from Chourides, Longbottom and Murphy (2003)

## 4.0 Methodology

This paper formulates KM strategies for property management companies in Malaysia. Only practising property management companies that are registered with the Board of Valuers, Appraisers and Estate Agents (BOVEA), Malaysia as of 31 December 2012 were involved in this research. There are twenty five (25) property management companies registered under BOVEA that are recognised to practise property management services in Malaysia, according to the Valuers, Appraisers and Estate Agents Act 1981 and Property Management Standard 2010. There were sixteen (16) registered property management companies that have participated in the survey to develop the most suitable KM strategies for property management companies in Malaysia, which forms the subject of discussion for this paper.

Content analysis was adopted in the initial stage to analyse each company's annual report and website. In addition, observations were made on each organisation's activities by attending certain meetings and daily work routine. This was undertaken to identify which KM components are significant to property management companies. According to (Ali, 2008), the main advantages of a documental review includes consistency of approach that can be applied in the research process, with documents for each company in the sample being subjected to rigorous interpretation against the same criteria. The main objective of this method is to identify whether each company implements KM fundamentals based on the nine (9) strategies that were identified. Having reviewed the literature, semi-structured interviews were conducted to envisage a better understanding of those documents.

A questionnaire survey was adopted to implicitly investigate the application of KM in the organisation, based upon strategies that were identified from various literatures and a series of preliminary surveys. These strategies were conceptual KM strategies that were derived from previous studies that suited the Malaysian environment, such as Grenon (2000), Lam (2008), Dixon (2005) and Fong (2009). **Table 3** represents the nine (9) KM strategies used as the basis of enquiry for this paper. Based on this framework, questionnaires were distributed to sixteen (16) identified property management companies. These companies represent 64% of the total number of registered property management companies in Malaysia. As nine (9) companies could not reveal the information required for this study, they were excluded from the study. All levels of management within the targeted organisations participated in this survey, namely high-level managers, middle managers and lower level managers. As such, the views represent the majority of the registered property management companies in Malaysia.

This approach yields better results as it covers all areas from various functional areas, apart from being able to avoid common and typical responses and viewpoints. All levels of management were asked the same questions in order to gather similar and consistent responses for each of the KM strategies. To strengthen the efficacy of the research, arrangements were made with some companies to observe first hand as to how KM activities were dealt with within the organisations. Some of these companies were willing to permit the researchers to attend certain company meetings for the purpose of observing the level of KM processes being practised in the establishments. However, privacy and confidentiality policies needed to be adhered to and therefore the names of the companies cannot be divulged.

In the questionnaire, respondents were asked about the level of implementation of these KM strategies, as these strategies were perceived to be very important from the previous survey. This previous survey (Razali, 2008) had been conducted in the pilot testing phase of the research, which aimed to identify the level of implementation of KM among property management companies in Malaysia. From the pilot test results, KM strategies were drafted in order to develop KM strategies for property management companies in Malaysia.

By using a scale from 1: not implemented to 5: extensively implemented, as well as through the use of Multiple Factor Analysis (MFA), the common KM strategies selected as being suitable for use by property management companies in Malaysia were identified. According to Abdi (2007), MFA

is used to analyse a set of observations described by several groups of variables. They added that MFA is used to integrate groups of variables describing the same observation. This method is combined with Principal Component Analysis (PCA) which normalises each variable by dividing it by its standard deviation (Abdi, 2007). According to (Hair, 1992), item loadings of >0.30 are considered significant, >0.40 are more important and >0.50 are considered very significant. However, [50] highlighted that there are no accepted absolute standards for the cut-offs; the choice is based on judgement, purpose of study and prior study. Therefore, as this study aimed to identify KM strategy framework for property management companies in Malaysia, the significant factor will be the base factor of the framework. **Table 3** presents the nine (9) KM strategies, along with its characteristics, that were formulated from the various literature surveys that have been identified as the basis of enquiry for this paper.

**Table 3:** Knowledge management strategy frameworks in property management companies in Malaysia

| | **Strategy** | **Characteristics** |
|---|---|---|
| 1. | Attitude among workers | Deal with strategies such as trust, flexibility, enthusiasm for the job, working closely with others, staff feels elated by incentive and reward schemes provided by the organisation, staff capture and use knowledge obtained from other industry resources, staff use formal mentoring practices, including apprenticeship and tolerance of failure |
| 2. | Information Technology strategies | Encompasses strategies such as using a website, wireless internet connection, bulletin board and awareness level of using these technologies |
| 3. | Systematic working method | Include factors that deal with using spreadsheets in daily tasks, all responses from customers will be paid close attention to and dealt with prior to the next testing, brainstorming, team work, work in pairs that are well accepted and recognised among staff, organisation encourages the practice of understanding, documenting, archiving customer requirements and the use of Microsoft Project to supervise property being managed |
| 4. | Support from top management | Consists of strategies related to organisational issues such as fairness, support for employees sharing information and autonomy |
| 5. | Knowledge culture in an organisation | Deals with strategies such as a special task unit being formed to manage knowledge, staff capture and use knowledge obtained from other public research institutions and universities, organisation encourages knowledge sharing among staff that attended training, CPD, conferences and seminars, staff taking own initiatives to independently upgrade their competency and skills and using email as part of communication culture |
| 6. | Information technology | All IT components that are required in the organisation |
| 7. | Knowledge creation | Includes strategies such as staff assessments are based on their individual contribution to the knowledge development in the organisation, a special task unit being formed to manage knowledge within the organisation, the organisation to encourage staff to transfer their working knowledge to new and inexperienced staff, organisations provide incentives and acknowledgement to the staff for innovations, new ideas and sharing of experiences and staff encouraged by the organisation to continue their |

| | | |
|---|---|---|
| | | professional course/education. |
| 8. | Repository system in the organisation | Deals with items such as bulletin boards, internet and website |
| 9. | Innovation | Encompasses items related to normal behaviour among workers such as being familiar with experimentation, being exact and problem solving |

## 5.0 Findings

The survey questionnaire was completed by respondents comprising all levels of managers (see **Table 4**). The highest percentages are the middle managers and junior managers, which make up almost 32% of total respondents, followed by managers (23%). This indicates that more than one manager from each level was involved in this survey. Meanwhile, **Table 5** presents the respondents profile in terms of size of organisations. Medium size companies dominated almost half of the total number of companies which participated in this survey.

**Table 4:** Respondents' Profile

| Level | Number | % of total respondents |
|---|---|---|
| Senior manager | 11 | 15.5 |
| Manager | 16 | 22.5 |
| Middle manager | 22 | 30.9 |
| Junior manager | 22 | 30.9 |
| Total | 71 | 100 |

**Table 5:** Respondents' Firms Profile

| Size of firms | Number of firms | Number of properties managed | Number of employees |
|---|---|---|---|
| Small | 8 (32%) | Less than 100 | Less than 10 |
| Medium | 11 (44%) | 100 to 500 | 11- 20 |
| Large | 3 (12%) | 501 to 1000 | 21- 30 |
| Very large | 3 (12%) | More than 1000 | More than 30 |

The analysis of each company's annual report and website, interviews conducted and observations were based on nine (9) KM strategies. This analysis is presented in the form of KM strategies mapping as shown in Appendix 1. It represents KM strategies mapping based on documentary evidence, observations and interviews. Only four companies have developed a KM definition for their organisation. These definitions are usually contained in work procedures or part of the company's vision and mission statement. Consequently, most of these companies appoint one officer to supervise KM activities in the company. However, KM activities in these companies are placed under the responsibility of certain key personnel such as the branch manager, financial manager or property manager. None of the companies appoint special officers solely to take care of KM.

In terms of budget, only three (3) companies allocated a budget for KM activities. However, the budget allocation only makes up 0.1% of the companies' annual budget. To ensure the successful implementation of KM strategies, KM tools have to support the KM strategies agenda. However, most of the companies provide only basic tools, such as the Internet and electronic documents (for example, email, pen drive and CD). Only a few companies are able to provide advanced tools such as KM regular meetings, in-house systems, management systems and brainstorming sessions. Interestingly,

all property management companies in Malaysia allow their staff to access the Internet, but such use is restricted to official purposes only.

The main barriers for most of the property management companies to implement KM strategies are budget constraints and organisational culture. Other obstacles mentioned are the lack of support from top management and employee awareness. In this survey, respondents were also asked whether they were aware of the relationship between KM strategies and business performance. The majority of respondents concur that KM strategies are able to improve business performance, as well as provide better service to clients. Although some companies have not yet implemented KM, some of the respondents were aware of the KM concept from other sources, such as the media and articles. Most importantly, three (3) companies have systematically undertaken a KM audit in their companies, which indicates the increasing awareness of KM in property management companies in Malaysia. This also indicates that the KM concept has a high potential to be implemented in the real estate field, specifically in property management.

In summary, the analysis of mapping, based on document and interview interpretations, enabled the exploration of real cases pertaining to KM strategies of property management companies in Malaysia. It also identifies which areas of the KM concept that can be practically implemented in property management companies in Malaysia. This analysis will also be a part of the KM strategies framework specifically designed for property management companies in Malaysia.

The analysis also discovered that certain areas need to be reinforced in order to develop the KM strategies framework. One of the major areas that need to be developed is the definition of KM in each company. It is imperative that organisations fully understand the definition of KM and its benefits. By being able to comprehend the definition of KM, each person in the organisation is able to embrace it into routine daily jobs. Other areas that need to be emphasised are the leadership of KM strategies in the organisation, KM tools and KM evaluations of the organisation. These areas rely upon one another, are interrelated and co-dependent upon one another. This survey also revealed that only one (1) company complied with almost all of the KM strategy elements that can serve as a framework for the other companies in implementing the KM strategies framework.

## 5.1 Multiple Factor Analysis

A framework summary of Multiple Factor Analysis (MFA) for KM Strategies to measure the relationship between one variable and a group of variables is written as follows:

$L_g\,(z, \{v_k, k=1, k_3\}) = L_g\,(z, K_3)$
= Inertia of all variables $v_k$ projected upon z

When the $v_k$ are reduced continues variables, weighted by $m_k$:

$L_g\,(z,K_3) = \sum_k m_k\,[(r(z,V_k)]^2$

If $L_g\,(z, K_3) = 0$, variable z is not correlated to any variable of the set $K_3$

Due to MFA weighting, $L_g\,(z, K_3) \leq : L_g\,(z, K_3) = 1$ when z is the first principal component of $K_3$.

Where:

$L_g$ = Measure of relationship
$z$ = Property management companies (Co1 – Co 16)
$K_3$ = KM strategies (KM strategy 1 – KM strategy 2)

$v_k$ = Inertia of all KM strategies

$m_k$ = Weighted of $v_k$

>0.30 is considered significant, >0.40 is more important and >0.50 is considered very significant (adapted from Abdi & Valentin, 2007).

**Figure 3** presents the diagram of the MFA data table for measuring the KM strategies in property management companies. **Table 6** presents the results of the MFA investigating the KM strategies framework that has been identified among the property management companies in Malaysia. Each principle component, the analysis consists of eigenvalue and the percentage of each eigenvalue. Each KM strategy is analysed alongside each of the property management companies. The final column tabulates the MFA value for each KM strategy versus the property management companies.

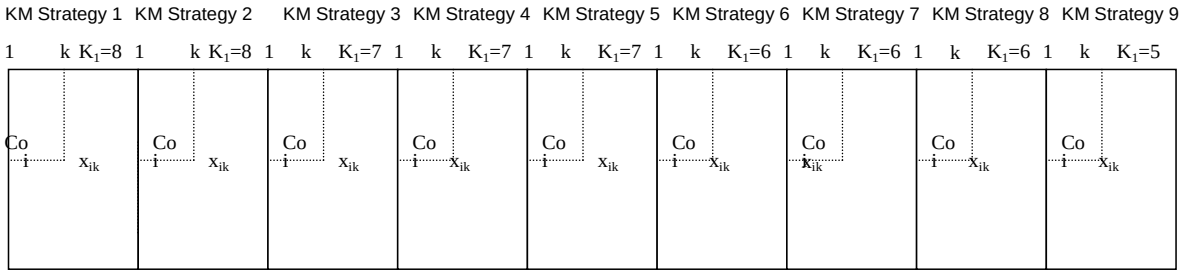


**Figure 3:** MFA Data Table for KM Strategies

**Table 6:** Eigenvalue from Separate PCA and from MFA for KM Strategies

| Company | PCA Co1 | | PCA Co2 | | PCA Co3 | | PCA Co4 | | PCA Co5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % |
| KMS 1 | **0.69** | 85% | **0.44** | 76% | 0.19 | 45% | -0.26 | 31% | **0.58** | 76% |
| KMS 2 | -0.04 | 32% | **0.83** | 83% | 0.20 | 53% | -0.14 | 41% | **0.45** | 53% |
| KMS 3 | -0.01 | 38% | -0.08 | 16% | -0.07 | 5% | 0.02 | 65% | -0.07 | 11% |
| KMS 4 | **0.45** | 78% | 0.17 | 63% | -0.06 | 12% | **0.88** | 88% | -0.06 | 15% |
| KMS 5 | 0.01 | 43% | 0.18 | 65% | **0.75** | 82% | 0.05 | 73% | **0.75** | 84% |
| KMS 6 | -0.04 | 31% | -0.04 | 21% | 0.03 | 21% | -0.01 | 45% | 0.03 | 32% |
| KMS 7 | -0.06 | 21% | 0.07 | 54% | 0.08 | 32% | **0.52** | 76% | 0.08 | 41% |
| KMS 8 | 0.11 | 55% | 0.01 | 43% | -0.12 | 8% | -0.07 | 24% | -0.12 | 8% |
| KMS 9 | 0.13 | 67% | -0.05 | 32% | -0.03 | 14% | **0.92** | 93% | -0.03 | 21% |
| Average % | - | 63 | - | 63 | - | 57 | - | 53 | - | 54 |

| Company | PCA Co6 | | PCA Co7 | | PCA Co8 | | PCA Co9 | | PCA Co10 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % |
| KMS 1 | 0.04 | 13 | **0.60** | 65 | **0.82** | 78 | **0.60** | 54 | -0.07 | 32 |
| KMS 2 | -0.20 | 4 | -0.53 | 3 | **0.81** | 75 | 0.29 | 32 | -0.11 | 21 |
| KMS 3 | 0.18 | 21 | -0.52 | 1 | **0.69** | 65 | **0.35** | 45 | **0.33** | 56 |
| KMS 4 | **0.94** | 89 | 0.03 | 23 | -0.64 | 14 | 0.04 | 21 | -0.27 | 2 |
| KMS 5 | **0.91** | 87 | -0.13 | 11 | -0.60 | 21 | -0.05 | 2 | 0.14 | 43 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| KMS 6 | **0.90** | 85 | -0.11 | 5 | -0.55 | 31 | 0.24 | 29 | **0.41** | 63 |
| KMS 7 | **0.88** | 76 | **0.54** | 63 | **0.35** | 63 | **0.78** | 87 | **0.79** | 67 |
| KMS 8 | **0.43** | 34 | **0.82** | 76 | **0.32** | 56 | 0.07 | 23 | 0.14 | 42 |
| KMS 9 | **0.82** | 73 | -0.02 | 14 | **0.35** | 45 | -0.04 | 4 | -0.18 | 11 |
| Average % | - | 58 | - | 49 | - | 57 | - | 56 | - | 52 |

| Company | PCA Co11 | | PCA Co12 | | PCA Co13 | | PCA Co14 | | PCA Co15 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % | Eigenvalue | % |
| KMS 1 | 0.00 | 22% | **0.66** | 81% | -0.13 | 52% | **0.45** | 73 | 0.27 | 43 |
| KMS 2 | -0.20 | 13% | 0.00 | 33% | 0.25 | 67% | -0.07 | 64 | **0.45** | 53 |
| KMS 3 | -0.13 | 41% | -0.10 | 18% | 0.14 | 60% | -0.08 | 53 | **0.52** | 54 |
| KMS 4 | **0.87** | 75% | -0.06 | 23% | **0.62** | 86% | **0.78** | 86 | -0.07 | 32 |
| KMS 5 | 0.14 | 32% | -0.25 | 7% | -0.29 | 31% | -0.02 | 65 | -0.12 | 24 |
| KMS 6 | **0.63** | 62% | **0.35** | 54% | -0.27 | 42% | **0.62** | 76 | **0.45** | 53 |
| KMS 7 | 0.21 | 43% | **0.31** | 43% | **0.54** | 75% | -0.19 | 32 | -0.13 | 53 |
| KMS 8 | -0.27 | 18% | **0.90** | 87% | **0.53** | 73% | 0.12 | 69 | **0.63** | 68 |
| KMS 9 | -0.28 | 15% | **0.90** | 86% | 0.21 | 63% | -0.11 | 43 | -0.37 | 3 |
| Average % | - | 61 | - | 57 | - | 61 | - | 58 | - | 63 |

| Company | PCA Co16 | | MFA | |
|---|---|---|---|---|
| | Eigenvalue | % | Eigenvalue | % |
| KMS 1 | **0.58** | 53 | 0.53 | 48.63 |
| KMS 2 | 0.11 | 45 | 0.21 | 51.47 |
| KMS 3 | **0.46** | 66 | 0.47 | 52.05 |
| KMS 4 | **0.74** | 78 | -0.07 | 60.00 |
| KMS 5 | **0.84** | 85 | 0.07 | 52.21 |
| KMS 6 | **0.47** | 67 | 0.11 | 51.84 |
| KMS 7 | **0.90** | 92 | 0.54 | 60.21 |
| KMS 8 | **0.45** | 65 | 0.32 | 47.11 |
| KMS 9 | **0.78** | 81 | 0.43 | 52.00 |
| Average % | - | 68 | - | 53 |

For company no. 1, the range percentage of PCA is between 42% and 87% and only two (2) KM strategies are considered important in this company (0.45 = more important and 0.69 = very significant; KMS 4 and KMS 1 respectively). Similarly with company no. 2 and no. 10, only two (2) KM strategies are regarded as the main KM factors. For company no. 2, KMS 1 and KMS 2 indicate the highest eigenvalue (0.44 and 0.83 respectively).

Company no. 4 and company no. 5 showed an increasing significance of certain KM strategies. Both of these companies have at least three (3), albeit differing, KM strategies (see **Table 6**). Other companies that showed at least three (3) KM strategies as the main KM factors in their companies are company no. 7, company no. 9 and company no. 13. Only company no. 15 has shown four (4) KM strategies as the main KM factors, while company no. 6, no. 12 and no. 16 have shown more than four (4) KM factors as the main KM factors in their companies (6 main KM strategies, 5 main KM strategies and 8 main KM strategies respectively). For this MFA, the highest eigenvalue is at KM strategies 4, for company no. 6 (0.94). This indicates KM strategy no. 4 is almost very significant to this company.

All property companies in Malaysia indicated KMS 7 (knowledge creation) as the most significant strategy of the KM concept. This is followed by KMS 4 (support from top management), which is slightly lower than KMS 7 (60.21% and 60% respectively). Most of the KM strategies are between factor loading 51% and 52% which constitutes five (5) KM strategies (KMS 5 – knowledge culture, KMS 3 – systematic working method, KMS 9 – innovation and KMS 6 – IT). Only two (2) KM strategies have percentages below 50% (KMS 1 – attitude (48.6%) and KMS 8 – repository system (47.1%). However, the MFA percentages of all KM strategies are quite close to each other which indicate that the property management companies have strong perceptions of the KM strategies. These findings positively indicate that the proposed framework sharing the various strategies can be practically implemented in property management companies in Malaysia.

## 5.2 Representation of Dimensions For Knowledge Management Strategies

**Table 8** presents a representation of groups from the KM strategies framework based on the MFA. The results indicate which KM strategies need to be emphasised in order for property management companies to implement the KM strategies framework. The results suggest that property management companies in Malaysia need to emphasise KMS 7 (knowledge creation) and KMS 4 (support from top management) as key KM areas in order to ensure the successful implementation of the KM strategy frameworks. The slight difference between these two strategies shows that most of the property management companies viewed these strategies as very significant elements of the KM strategies framework. This is followed by KMS 5 (knowledge culture), KMS 3 (systematic working method) and KMS 9 (innovation). The difference in percentages between these KM strategies was marginal (0.1%), which indicates that most property management companies believe that these strategies are very significant to each other.

**Table 8:** Representation of Dimensions for KM Strategies

| Rank | Dimensions | Percentage (%) |
|---|---|---|
| 1. | KMS 7 – Knowledge creation | 60.2 |
| 2. | KMS 4 – Support from top management | 60.0 |
| 3. | KMS 5 – Knowledge culture | 52.2 |
| 4. | KMS 3 – Systematic working method | 52.1 |
| 5. | KMS 9 – Innovation | 52.0 |
| 6. | KMS 6 – Information technology | 51.8 |
| 7. | KMS 2 – Technology awareness | 51.5 |
| 8. | KMS 1 – Attitude | 48.6 |
| 9. | KMS 8 – Repository system | 47.1 |

Similarly with other KM strategies, from a dimension percentage point of view, KMS 6 (IT) and KMS 2 (technology awareness), showed a difference of less than 1% from the previously ranked

KM strategies (51.8% and 51.5%). This also indicates the significance of these KM strategies, together with previous KM strategies. The other KM strategies below 50% in terms of representation in dimensions were KMS 1 (attitude) and KMS 8 (repository system). The range of percentages between 47% and 60% shows that almost all the KM strategies that have been developed were significant to property management companies in Malaysia. The results will provide a clearer picture to the property management industry as to which particular areas need to be emphasised in order to implement KM strategies. Thus, the organisation can plan a strategic management plan that covers all aspects of property management, including management and technical aspects.

There is a need for property management companies in Malaysia to develop KM strategies. All human capital in the companies, from senior management, middle management, lower management and technical staff, must share their knowledge with others. Thus, companies should take action to encourage a culture of knowledge and sharing. Companies must also support all levels of management taking part in any knowledge activities. **Figure 4** summaries a framework for KM strategies after assessment through various stages such as pilot studies, expert panel meetings, testing and validating.

## 5.3 Revised KM Strategies For Property Management Companies

This research investigates the KM concept then formulates a framework specifically for property management companies. Having a competitive advantage in the real estate business is becoming more challenging due to globalisation. As such property management companies in Malaysia need to be evolved in order to stay in the business. It is believed that the concept of KM in the real estate sector will not only provide better management, but will also generate more profit, which is the main target of any business in the world. **Figure 4** summarise the framework, after testing the registered property management companies, to investigate the most suitable attributes of KM strategies for property management companies in Malaysia.

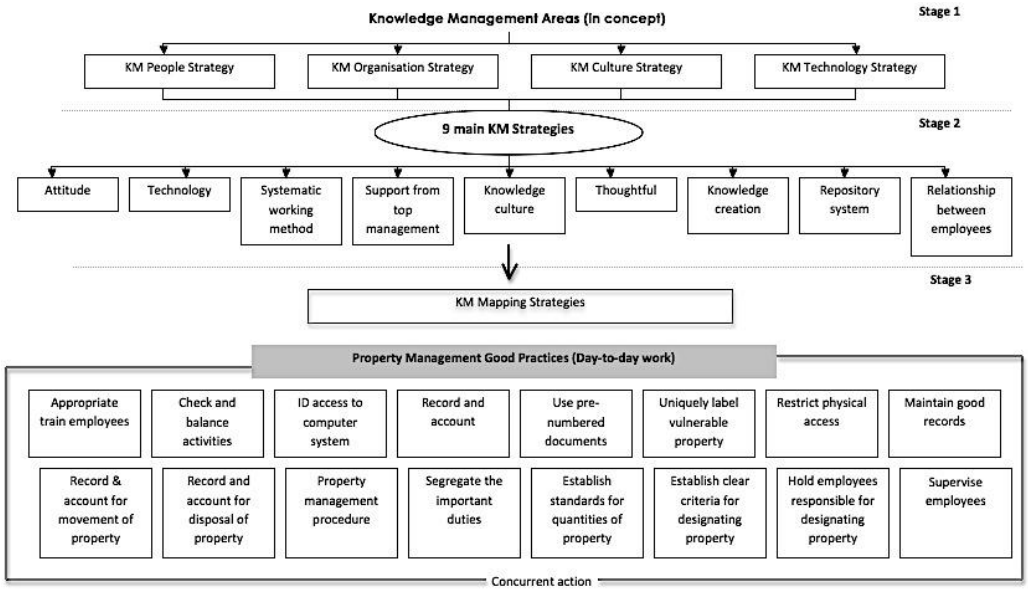


**Figure 4**

To understand the framework, the first step that needs to be taken into account is to investigate four (4) basic KM strategies formulate especially for property management companies. This is aim to investigate niche characteristics which is unique to property management companies. Certain aspects of organisational characteristics can promote or hinder the handling of knowledge in an organisation. Property management services, particularly the business of maintenance and rent

collecting, are in the limelight as one of the new knowledge- service-based industries. Therefore, it is crucial to identify what property management services are. Then it will create a knowledge environment in organisation. Property professionals are now called project managers rather than brokers, and professionals in diverse areas are coming to the market. So, it will create different environments between property management, auction, land development and planning, construction, financing and sales management. Thus, property management businesses need to identify the characteristics of each of this type of property management business environment. After identifying all characteristics in property management business, KM strategy promotes a particular knowledge environment which is thought to be conducive for the intended KM activities. In knowledge environment, the most crucial thing is exchanging of knowledge.

In order to ensure that knowledge strategy in property management is successful, these knowledge area and knowledge assets were analysed. The method were used in analysing knowledge in the organisation is to measure the various aspects within the organisation. Each of these factors in knowledge asset and knowledge areas will link to the knowledge process orientation which consists of technology and critical performance. In the complex world of real estate business, people in property management companies must have a high level of creative thinking. Creative thinking skills show flexibility and an ability to think outside the box for answers. In order to generate creative thinking among property professionals, the knowledge process orientation in organisations must take place. This research identified some attributes of KM among some property management organisations. Some of the attributes are sharing information freely, working closely with others, team oriented work, trust, fairness, enthusiasm for the job etc. Thus, in property professionals, in order to identify knowledge process, it must start with interview and workshops. These validation process then created another process in KM strategies which known as nine (9) main KM strategies encompasses attitude, technology, systematic working method, support from top management, knowledge culture, thoughtful, knowledge creation, repository system and relationship between employees.

The process continues to identify knowledge orientation in property management business. This research suggested these clusters should be presents in organisations which are; customers, sectors, methods and techniques, trend and development in society and business, competitors, internal organisation, project management, marketing of services, innovation and profession (property management professional).

The next process is to run the KM strategies mapping. This step is aimed to identify the experiences in knowledge management companies as a whole and also as individual worker in organisation. The approach for this step is based on a holistic framework of KM process. These can be classified into two main approaches:

i. Top Down
   The overall strategic direction of the organisation is used to identify the focus of the knowledge management initiative. This is reflected in a series of activities designed to meet this broad goal.

ii. Bottom-up
   Research is conducted into the activities of staff involved in key business processes. The findings of this research highlights key staff needs and issue, which are then, tackled through a range of knowledge management initiatives.

KM mapping process will represents KM strategies mapping based on documentary evidence, observations and interviews. Most importantly the process will identify the most important knowledge management strategies that suite to the organisation. This framework suggests the overall KM strategies for property management companies based on the mass study from property management companies. However each companies has its own unique organisation behaviour. As such the mapping process is the way to ascertain the organisation comportment. This framework is taken from stage 1 (KM areas in concept, stage 2 (9 main KM strategies) and stage 3 (KM strategies mapping). In

addition, property management good practices which comprised day-to-day work) is considered as concurrent action which need to synchronise with all stages. These good practices needs to be embedded with the entire KM framework processes to ensure the successful of the implementation of KM strategies.

With the competitive advantage of real estate business is become more challenging due to globalisation process in the future, property management companies in Malaysia needs to be evolved in order to stay in the business. It is believed; the concept of knowledge management in real estate will not only give a better way of management but also will generate more profit which is the main target in any business in the world. This framework based on the conceptual framework design based on cultural environment, knowledge area, and knowledge asset, and technology, critical performance, integrating resource knowledge, process orientation and knowledge management system. The aim is to identify a conceptual framework based on various literature and framework design by other researchers in other area. The conceptual framework of KM is basically the same; nevertheless it has to be suited to real estate business. The process of developing the key strategies is important hence encouraging understanding among real estate professionals. Thus, it will create an environment in appreciation of the most important asset in company's knowledge. In flow of knowledge management, property management companies can apply according to the framework that has been developed. It will take some times in order to see the successful of the framework or impact to the business especially from the point of profit view. However, a long distance has to start with the first step.

## 5.4 Implications for Information Technology Development

The aim of this study is to identify a conceptual framework based on various literatures and frameworks designed in other areas. Thus, this study has included cultural environment, knowledge areas, knowledge assets, IT, critical performance, integration of resource knowledge, process orientation and knowledge management systems as the suitable strategies. The conceptual framework has then been tested on the targeted companies in order to ensure the validity and suitability of the framework.

All the organisations that have provided responses in this study are aware of the importance of knowledge sharing and the benefits of KM, however there are some differences in their perception. Some organisations perceived KM as synonymous with managing information. There is a clear difference between knowledge and information and this difference is not academic. As explained by (Malhotra, 2000), this strategic difference is not a matter of semantics; rather, it has critical implications for managing and surviving in an economy with information overload. The purpose of KM or the role of the person managing knowledge is also misunderstood in some organisations. The narrow interpretation of KM implies that the role of knowledge manager is sometimes wrongly perceived to be that of a technical librarian for managing information on the Intranet. The role of knowledge manager needs to be communicated in some organisations to facilitate knowledge sharing and to dispel fears sometimes associated with KM such as job insecurity.

The primary goal or motivation for KM varies from seeking best practices in all business activities to providing a better service to clients. However, the overall objectives are to improve project or business performance and indirectly to increase profitability. Three (3) of the organisations already have a KM strategy in place. The absence of a working definition of what constitutes knowledge to underpin the KM strategy in some organisations reflects the casual approach to KM and is an indication of the need for further exploration of KM issues.

While it is the tacit knowledge of people that is more valuable for engendering innovation (Egbu, 2000), it is ultimately the products that determine whether an organisation will remain competitive. However, none of the organisations appear to have a coherent structure for looking at knowledge management requirements in terms of the relationships between people, processes and

products (Robinson, 2005). KM strategies are more likely to be successful if there is a structure for identifying the relationship to avoid chaos or an archipelago of knowledge islands (Elliot, 1997).

Some organisations enjoy a higher degree of top management support than others. Senior management support and leadership for KM is vital. It is observed that two (2) organisations have appointed a Property Manager and Branch Manager who will administer knowledge management activities. While it is true that the function or role is more important than the title, support for KM by individuals as part of their normal jobs can be a source of distraction, as they can be vulnerable to pressures from other conflicting IT activities. KM strategies also need to be fully resourced in terms of KM teams to support the leadership, a budget and an infrastructure. There are two (2) organisations with a KM strategy in place and the third organisation is currently fine-tuning its strategy, having employed an additional staff member. A budget of approximately RM 100 000 was specified in one organisation and two (2) organisations have spent between RM 32 000 and RM 1000 for knowledge management activities. Only one organisation has used an external consultant, where the consultant was asked to review if knowledge could be captured from processes, as part of a change management programme. All the organisations have an Intranet that is being used to support KM, although some are more advanced than others.

Organisational culture is considered one of the most crucial factors contributing to the success of a KM strategy. The responses given in this study confirm that organisational culture is a key barrier and this has not yet been addressed in most organisations. KM is not only a technical problem involving the use of IT, but a socio- cultural one involving motivating people to make them willing to yield up this knowledge for organisational use (Marshall, 2000). Only three (3) companies have implemented a change management programme to strengthen the relationship between teams and to inculcate a positive attitude to knowledge sharing, as well as associated barriers such as people's fears, attitudes or resistance to knowledge sharing. Other barriers identified include initiative overload, bureaucracy associated with KM, poor IT infrastructure, lack of top management support, budgetary problems and organisational culture.

The findings also revealed three elements from the representation of dimensions for KM strategies which were closely related to IT; namely IT (ranked sixth), technology awareness (ranked seventh) and repository system (ranked ninth). These indicate that IT plays a major role in the KM concept for property management companies in Malaysia. As such, IT is a key element to ensure the success of the concept. This has been further evidenced from the results of the survey and case study. In current times, IT is a necessity in any framework or concept in management. Information technology not only plays a role as a tool, but also adds value to the success of the concept. For instance, in the KM strategy dimensions, the elements such as knowledge creation, systematic working method and innovation also need IT as part of the system. Hence, IT will ensure the success of the KM concept in property management companies and later advance the nation's economic transformation process.

The findings also indicate that property management companies are at varying levels of implementing KM. The organisations range from having made limited progress (as a result of approaching KM without a dedicated leadership and an under-resourced KM plan) to organisations that have made reasonable progress (mainly due to having a KM strategy supported by leadership and dedicated resources). One way of finding out where an organisation stands in terms of KM maturity is to benchmark their activities with other organisations. (Dent, 2004) attempted to benchmark organisations, with the results providing a mechanism for allowing organisations to see where they stand compared to leading property management companies in other countries.

## 6.0 Research Limitations

This study concentrated on management issues in property management companies, as well as some technical issues involving middle and lower management hierarchy in the organisations. The level of commitment of all classes of managers and workers reflect the results of this study. This

research also only focussed on 25 property management companies which were registered with the BOVEA to avoid legal issues which are beyond the context of this study. Out of the 25 companies, only 16 were willing to take part in this study. However, it is noted that with the introduction of the Strata Management Act 2013 in February 2013, unregistered property management companies are now allowed to operate property management businesses in the country. However, the entire research process was conducted between June 2010 and December 2012.

Furthermore, the framework that has been developed from this study essentially relies on the commitment of the property management companies. The responses from the surveys and interviews were the foundation of the framework. Thus, the honesty from the participants was crucial to ensuring accurate results. In order to see the impact of the success of this framework, further research or consultation projects need to be undertaken to study the effectiveness of this KM strategy framework.

## 7.0 Conclusions

This study has broadened the knowledge of the KM concept theory into the real estate arena, particularly in the property management practice. At the same time, the concept of KM has gained popularity, particularly with the country's initiatives to transform its economy from a labour intensive economy to a knowledge-based economy, in order to achieve the status of a high-income country. The property industry contributes significantly to the country's economic development. Property management as part of the services offered in the property industry has also been affected by the rapid growth in this sector. It is therefore believed that the concept of KM that covers all areas of organisational management and technical aspects from the top to the bottom level of an organisation can support the property industry.

This research attempts to achieve three main objectives, which are to:

i. Identify knowledge management strategies used in property management companies;
ii. Assess the existing knowledge management strategies in property management companies; and
iii. P rovide applications for knowledge management strategies within the property management organisation.

In order to achieve the above objectives, a systematic research methodology was drafted. As such, this section provides an overview of the achievement of each objective.

Objective 1 – to identify knowledge management strategies used in property management companies. In order to achieve this objective, several surveys were conducted to assess the implementation of KM in these companies. Prior to that, an in depth analysis was undertaken of the literature to identify the most suitable KM strategies to be implemented in property management companies. Literature reviews provided an overview of KM concepts from a theoretical point of view. The pilot survey was done using a face-to-face interview and questionnaire to get a better picture on KM practices in the companies. From the pilot survey, a questionnaire was drafted. Only sixteen (16) out of the twenty five (25) registered property management companies participated in the surveys. The results illustrate that there are very little attempts to relate KM concepts to property management.

Objective 2 - to assess the existing KM strategies in property management companies. This objective aims to assess the current implementation of KM strategies in property management companies. In order to achieve this objective, the current strategies in terms of KM concepts in property management companies were explored. From the results, several KM strategies that were believed to be the most suitable strategies to be implemented in property management companies in Malaysia were defined. Factor analysis and PCA were used in order to identify the current KM strategies to be implemented. Table 8 provides a thorough analysis regarding each of the four (4) KM

strategies that were identified from the first stage of the survey. From the PCA, the general KM strategies for property management companies in Malaysia were clearly identified. Instead of the four (4) strategies observed, nine (9) key areas were developed from the empirical analysis. These strategies in turn became the KM strategies which were appropriate for property management.

Objective 3 - to provide a KM strategy application within the property management organisation. The results and findings sections of this paper contain the entire premise of the application of KM strategies within the property management companies in Malaysia. In order to achieve this objective, a case study approach was used in order to get a better overview of the practical implementation of KM strategies for property management companies. However, a two-stage approach was basically used to highlight the key issues regarding KM, prior to conducting the case studies. Firstly, the literature review and initial discussion with companies participating in the project provided the basis for identifying the key issues in KM. Secondly, an exploratory survey was carried out to assess the perception of KM in property management organisations using a sample of 25 registered property management companies. The interviews focused on the key themes of KM, such as the organisations' goal, KM strategy, the tools for implementing KM, barriers and the evaluation of KM. The results of the case study analysis were tabulated in several tables in the paper. The findings also described the suggested KM strategy process for property management companies. The section also detailed a property management good practice as a guideline for property management companies in Malaysia. From the guideline, a 'property management knowledge maturity framework was formulated in order to integrate between property management practices and KM' concepts.

A validation process is vital when undertaking research to confirm that the results of the research are precise. Furthermore, the process ensures that the targeted respondents of this research, who are also the main stakeholders, know whether the formulated framework can be implemented in their companies. The purpose of this type of validation process was to assess the current implementation of the KM strategies that had been developed earlier. Nine (9) main strategies were developed, based on a factor analysis of the various KM variables. It was then tested on the property management companies to identify the major KM strategies. To strengthen the analysis and validation process of the KM strategies framework, the data from the sixteen (16) responses were examined using MFA to identify a common KM strategy that was suitable for property management companies in Malaysia. The results from the analysis showed which KM strategies really needed to be emphasised in order for property management companies to implement the KM strategies framework. As IT plays a major role in the development of the KM strategy process, a special section was inserted into the paper to explain the implications of this framework on IT development. Overall, this study establishes the connection between IT and its applications to the property management sector in Malaysia. The framework for interaction needs to be clear so it can act as a guideline for stakeholders in property management.

It is more challenging for real estate businesses to have a competitive advantage due to globalisation, as such; property management companies in Malaysia need to evolve in order to stay in business. It is believed that the concept of KM in real estate will not only provide a better way of managing, but will also generate more profits, which is the main target in any business. This framework, based on the conceptual framework design, the cultural environment, knowledge areas, knowledge assets, technology, critical performance, integrating resource knowledge, process orientation and knowledge management system. The aim was to identify a conceptual framework based on various literatures and frameworks designed by other researchers in other areas. The conceptual framework of KM is basically the same; nevertheless it has to be suited to real estate businesses. The process of developing the key strategies is important, hence encouraging understanding among real estate professionals is necessary. Thus, it will create an environment which appreciates the most important asset of a company, its knowledge. With the flow of knowledge management, property management companies can apply the framework that has been developed. It will take some time in order to see the success of the framework or the impact on businesses,

especially from a profit point of view. However, there is a long way to go and the first step has to be taken.

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**Appendix 1:** KM Strategies Mapping Based on Documents Interpretation

| **KM Mapping** | **Company 1** | **Company 2** | **Company 3** | **Company 4** |
|---|---|---|---|---|
| KM definition available | Yes | Yes | Yes | Yes |
| Goal of KM | Improve technical process by reducing mistakes or sharing knowledge | Provide better service to clients | Provide better service to clients | Improve company's image to clients and stakeholders |
| KM Strategy | Yes | Yes | Yes | No |
| KM Leadership | Property Manager (Human Resources) | Deputy Branch Manager | Branch Manager | Financial Director |
| Resources to Support KM Strategy | Budget<br>(RM 100 000 per year)<br>IT Infrastructure<br>5 full-time clerical staff to administer knowledge repository | Budget<br>(RM 32 000 per year)<br>IT infrastructure<br><br>2 full-time clerical staff | Budget<br>(RM 12 000)<br>IT infrastructure<br>1 full-time clerical staff | No budget |
| Main KM Tools | Internet<br>Intranet<br>Fortnightly meetings<br>Electronic documents<br>Management systems<br>In-house systems<br>Virtual work centre | Internet<br>Intranet<br>Regular meetings<br>Electronic documents<br>Management systems | Internet<br>Intranet<br>Electronic documents<br>Management systems | Internet<br>Electronic documents |
| Intranet access, content management and validation approach | Access to all staff | Access to all staff | Access to all staff | Access to all staff |
| Barriers | Organisational culture | Organisational culture | Organisational culture | Budgetary problems |
| Links between KM and Business Performance | Yes | Yes | Yes | None |
| KM Evaluated | Yes (Basic measure) | No | No | No |

Continued

| **KM mapping** | **Company 5** | **Company 6** | **Company 7** | **Company 8** |
|---|---|---|---|---|
| KM definition available | No | No | No | No |
| Goal of KM | To improve supply chain process in company | Provide better service to clients | To improve company's performance | Provide better service for clients |
| KM Strategy | No | No | No | No |
| KM Leadership | Financial Director | Branch Manager | Branch Manager | Branch Manager |
| Resources to Support KM Strategy | No budget | No budget | No budget | No budget |
| Main KM Tools | Internet<br>Electronic documents<br>Brainstorming | Internet<br>Electronic documents<br>Regular meetings | Internet<br>Electronic documents<br>Ad hoc committee<br>Skills Yellow Pages | Internet<br>Electronic documents |
| Intranet access, content management and validation approach | Access to all staff | Access to all staff | Access to all staff | Access to all staff |
| Barriers | No | No | No | Budget constraints<br>Organisational culture |
| Links between KM and Business Performance | To improve supply chain process in company | Provide better service to clients | To improve company's performance | Yes |
| KM Evaluated | No | No | No | Yes (Basic measure) |

Continued

| **KM Mapping** | **Company 9** | **Company 10** | **Company 11** | **Company 12** |
|---|---|---|---|---|
| KM definition available | No | No | No | No |
| Goal of KM | Improve service to clients and stakeholders | Give better and quality service to clients | Improve company's image to clients and stakeholders | Improve business profit from year to year |
| KM Strategy | No | No | No | No |
| KM Leadership | Branch Manager | Branch Manager | Senior Property Manager | Property Manager |
| Resources to Support KM Strategy | No budget | No budget | No budget | No budget |
| Main KM Tools | Internet<br>Electronic documents<br>Brainstorming | Internet<br>Electronic documents<br>Share fair | Internet<br>Electronic documents | Internet<br>Electronic documents |
| Intranet access, content management and validation approach | Access to all staff | Access to all staff | Access to all staff | Access to all staff |
| Barriers | Budget constraints<br>Organisational culture | Budget constraints<br>Maintenance of IT infrastructure | Employee understanding<br>Support from top management | Support from top management<br>Employee resistance |
| Links between KM and Business Performance | Yes | Yes | None | None |
| KM Evaluated | No | No | No | No |

Continued

| **KM Mapping** | **Company 13** | **Company 14** | **Case 15** | **Case 16** |
|---|---|---|---|---|
| KM definition available | No | No | No | No |
| Goal of KM | Provide better service to clients | More profit | Improvement of services | Better image for clients and stakeholders |
| KM Strategy | No | No | No | No |
| KM Leadership<br>Resources to Support KM Strategy | Property Manager<br>No budget | Branch Manager<br>No budget | Branch Manager<br>No budget | Branch Manager<br>No budget |
| Main KM Tools | Internet<br>Electronic documents | Internet<br>Electronic documents<br>Share fair | Quality circles<br>Internet<br>Yellow Pages<br>Electronic documents | Internet<br>Electronic documents<br>Regular meetings |
| Intranet access, content management and validation approach | Access to all staff | Access to all staff | Access to all staff | Access to all staff |
| Barriers | Budgetary problems<br>No support from top management<br>IT infrastructure<br>Lack of understanding | Budgetary problems<br>No support from top management<br>Human resources constraint | Budget constraints<br>Organisational culture | Budget constraints<br>Organisational culture |
| Links between KM and Business Performance | None | None | Yes | Yes |
| KM Evaluated | No | No | Yes (Basic measure) | No |