

DEVELOPMENT OF KNOWLEDGE MANAGEMENT STRATEGIES FOR PROPERTY MANAGEMENT COMPANIES IN MALAYSIA

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Abstract:

This paper attempts to develop a knowledge management framework concept that can be used by property management companies in Malaysia. The strategy, which takes the form of a conceptual model, is formulated from various literature surveys on knowledge management. It is then tested upon property management companies in Malaysia. The case study includes 25 property management companies registered with the Board of Valuers, Appraisers and Estate Agents. Empirical validation was done to propose the KM strategies model in the context of property management. Using statistical analysis, several magnitudes were identified as key strategies of KM in the property management companies. From the findings, an inclusive set of activities of KM in property management companies in Malaysia is shown.

Keywords - Knowledge Management Strategy, Property Management, Malaysia.

INTRODUCTION

Knowledge management (KM) is a common concept in management theory. It has been practised in many fields such as business, human resource management, engineering, medicine and science. Being a common concept in management, as a corollary, it can practically be implemented in the property management fraternity particularly in Malaysia. 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 on the radar from the investors' point of view. In terms of global property performance, Malaysia contributes 0.7% and is ranked at number 18 (Table I). Real Estate Investment Trusts (REITs) have been established in Malaysia since August 2005 and it contributes 0.3% of the global market and 2.4% of the Asian market. Malaysia is ranked at no. 14 in the world REITs market (Table II). 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 (Table III). This indicator has given a positive and significant impact to 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 particularly REITs is well-sustained. Premising on the above, it is believed that the KM concept can assist property management players to play their role more effectively and hence positively impact the property industry.

Table I. Asian Listed Property Companies Composition: June 2009

Country	Number of property securities	Market capitalisation (US\$)	Percentage of Asia market	Percentage of global market	World ranking (by \$)
Hong Kong	126	\$289.2B	43.1%	17.6%	2
Japan	155	\$117.1B	17.5%	8.8%	3
China	78	\$131.6B	19.6%	7.8%	4
Singapore	62	\$63.6B	9.5%	4.5%	7
Malaysia	83	\$10.5B	1.6%	0.7%	18
Taiwan	47	\$12.2B	1.8%	0.8%	26
Thailand	51	\$6.1B	0.9%	0.4%	29
Vietnam	5	\$1.0B	0.2%	0.1%	42
South Korea	7	\$0.5B	0.1%	0.1%	45
Sri Lanka	17	\$0.2B	<0.1%	<0.1%	52
Total Asia	743	726.41	100.0%		
Total Global	2031	1686.06		100%	

Source: Macquarie Securities (2009)

Table II. Asian REITs Companies Composition: June 2009

Country	Number of property securities	Market capitalisation (US\$)	Percentage of Asia market	Percentage of global market	World ranking (by \$)
Japan	41	\$30.8B	55.3%	7.5%	4
Singapore	20	\$13.1B	23.5%	3.2%	7
Hong Kong	7	\$7.8B	14.1%	1.9%	9
Taiwan	8	\$1.7B	3.1%	0.4%	13
Malaysia	13	\$1.4B	2.4%	0.3%	14
Thailand	6	\$0.3B	0.6%	0.1%	19
South Korea	6	\$0.5B	0.9%	0.1%	21
Total Asia	101	55.6	100%	13.5%	
Total Global	506	412.4		100%	

Source: Macquarie Securities (2009)

Table III. Global Real Estate Transparency Index: 2008**High Transparent**

Canada, Australia, USA, New Zealand, UK, Netherlands, France, Sweden, Belgium

Transparent

Ireland, Hong Kong, Singapore, Germany, Finland, Spain, Austria, Norway, Italy, Switzerland, South Africa, Portugal, Malaysia

Semi Transparent

Chile, Latvia, Russia, Estonia, Slovakia, Dubai, Greece, Bulgaria

Low Transparent

Kuwait, Turkey, Colombia, Peru, Uruguay, China

Opaque

Belarus, Sudan, Cambodia, Peru, Uruguay, Venezuela

Source: JLL (2008)

However, very few research studies have been conducted on the concept of KM in property management. Among these are Fong and Lee (2009) whose work discussed on the nature of property professionals' acquisition, sharing and reuse of knowledge in property management firms, while Hipkin (2001) explored on the implementation of KM in physical asset management. As asset management can be a part of property management activities such as reliability-centred maintenance, multi-skilling, total productive maintenance and hazard and operability studies, he suggested the introduction of maintenance management information systems (MMIS) (Hipkin, 2001). This requires knowledge as a part of the imminent system. Chin and Poh (1999) touched on quality in property management in Singapore based on ISO and TQM models, while Li (1997) found that there are many problems in the implementation of good property management practice in this emerging property market. He also stressed that this is especially the case when the supply of good quality buildings is increasing in various cities, and competition among cities and buildings will soon be very keen. According to Wynn *et al.* (2007), the property management industry has also seen innovative changes in recent years, not least caused by the advent of the internet and the evolution of new routes to markets. The term of a 'new economy' in property was introduced by Dixon (2005) which highlighted on major structural changes driven by globalisation and information and communication technology. He also stressed on the diverging trend which has shifted from tangible physical assets towards intangible goods such as knowledge and information. This has also in effect reflected the nature of how business in real estate is conducted nowadays. Real estate businesses are engaged with land, money, location, value, property and estate by tradition. However, the new economy will now take place in a globalisation 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 an economy where knowledge is becoming more vital to the extent that it will form the basis of power and prosperity, talents will be recognised as very important and key assets to organisations. This is the concept of 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 *et al.*, 2007). Hence, it is imperative that the KM concept is implemented in organisations in order to transform them into entities with competitive advantage in this borderless world.

Nevertheless, a KM strategy must be put in place prior to achievement of the above, as it constitutes the initial level of KM itself.

KNOWLEDGE MANAGEMENT: LITERATURE PERSPECTIVES

According to Diakoulakis *et al.* (2004), KM has been gradually established as a strong methodology to support business viability, competitiveness and growth. Grenon (2000), described KM as a tool aimed at providing a framework for anticipating the unknown. While Rubenstein *et al.* (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).

According to Shawn Callahan (2003), KM strategy should encompass:

- i. actions that are intended to result in anticipated business outcomes;
- ii. actions that emerge as a result of the many complex activities that are undertaken within an organisation.

Lam (2008) highlighted that, from the strategic management point of view, managers should always review the environmental changes and seize opportunities to improve their organisational performance. In the information age, many organisations compete for shrinking profit margin in increasingly global market (Aurum *et al.*, 2007). Malmberg *et al* (1996) bring to light three key issues in order to ensure competitiveness in firms:

- i. localised innovation processed
- ii. barriers to the diffusion of knowledge
- iii. attraction of outsider sources of knowledge

Gibson and Hedley (1999) added that information is critical to the management process. They further stated that the core activities and responsibilities of any corporate property manager rely on having good quality, accessible and accurate information. Matzdorf *et.al* (2000) strengthens this statement and come out with a study pertaining to barriers to organisational learning in the chartered surveying programme. One of the main targets in KM concept is to create learning organisation. The study reveals that the main obstacles were:

- iv. emphasis on individual learning;
- v. learning-equals-training;
- vi. learning-equals-lack-of-knowledge attitude;
- vii. a not precisely defined but all-pervading notion of professionalism competition;
- viii. the complex-or even contradictory-nature of the professional bodies;
- ix. those 'unwritten rules' within the profession that work against organisational learning;
- x. the traditional hierarchical structure within the profession and in surveying firms;
- xi. learning as a cost factor rather than an investment; and
- xii. individuals' prior experiences of learning.

From the aspect of dissemination of knowledge, Almond (2001) emphasises on the importance among surveyors to be well versed in local market conditions. His study focuses on how knowledge is disseminated and the issues' impact on practice. The study stresses on how strategic knowledge is universally applied; for example, knowing that horizontal cracking at half-metre intervals is a sign of cavity wall tie failure, or knowledge of particular property types. Thus, 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 Gibson (1994), property to property managers is a technical challenge. They only focus on the building and not the activity which takes place inside. She added that property to them is building which needs to be renewed, accommodation which needs to be refurbished, and a tax liability which needs to be minimised. Thus Gibson (1994) drafted a strategy framework for property management which emphasised on how operational property is managed on par with all other significant resources and property should be part of an organisation's strategic planning process. In other words, property managers should integrate operational objective combined with all information on property, operational and external. At the same time property managers should give notice on how to achieve (activities, skills required and responsibilities) and how to monitor (property and management). After these activities work in tandem, as a result, the property objective will be achieved (figure 1).

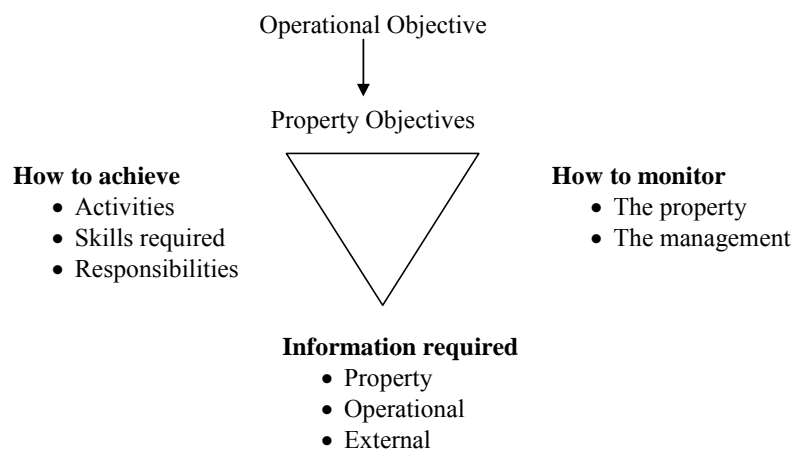


Figure I: Property Management Strategic Framework (Gibson, 1994)

METHDOLOGY

This paper is based on previous studies that aim to formulate KM strategies for property companies in Malaysia conducted by one of the authors in 2008. Only practising property management companies registered with the Board of Valuers, Appraisers and Estate Agents, Malaysia as of 31st December 2007 are involved in this research. The same respondents participated in the survey to investigate the implementation of the KM concept in property management companies in Malaysia, which forms the subject of discussion for this paper.

The first methodology that was used in this survey was based on content analysis which analysed each company's annual report and website. In addition, observation by attending certain meetings and daily routine work was done to identify which KM components are significant to property management companies. According to Ali et al. (2008), the main advantages of document review include the consistency of approach that can be applied in the research process with documents for each company in the sample subject to rigorous interpretation against the same criteria. The main objective of this method is to

identify whether each company has element of KM based on 9 strategies that have been identified. Semi-structured interviews were done in order to get a better understanding of those documents.

To strengthen the methodology, a questionnaire was used to identify implicitly the use of KM in the organisation. It was based on nine KM strategies that were formulated from the previous surveys by Razali (2008). Table IV presents the nine KM strategies that have been formulated from the previous surveys, and which have been identified as the basis of enquiry for this paper. Based on this model, questionnaires were distributed to the 25 identified property management companies. However, only 16 companies are willing to participate in this research. These companies represent 64% of the total number of registered property management companies in Malaysia. All levels of management within the targeted organisations participated in this survey comprising high level managers, middle managers and lower level managers. This approach yields better results as it covers all levels from various functional areas apart from being able to avoid common, typical responses in viewpoints. Asking the same questions to all levels of management would also provide for a similar basis and perspective in their responses for each of the KM strategies. As with previous surveys, semi structured interviews were carried out to disseminate the questionnaire and to determine the number of property managed by the companies, past and current. 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 by the companies. Some of these companies were willing to give permission to attend certain company meetings for the purpose of observing the level of KM process being practised in the companies. However, private and confidentiality policies need to be adhered to and therefore the names of the companies could not be divulged.

In the questionnaire, respondents were asked on the level of implementation of these KM strategies as these strategies were perceived to be very important from the previous survey. By using a scale from 1: not implemented to 5: extensively implemented, and then by using descriptive analysis such as frequency and mean, the level of KM implementation based on nine main strategies were analysed. The data from 16 responses were examined using Multiple Factor Analysis (MFA) to identify common KM strategy that was suitable to use in property management companies in Malaysia. According to Abdi and Valentin (2007), MFA is used to analyse a set of observations described by several groups of variables. They added that MFA is to integrate groups of variables describing the same observation. This method is combined with principal component analysis (PCA) which will normalised each variable by dividing it by its standard deviation (Abdi & Valentin, 2007). According to Hair *et al.* (1992), item loadings of >0.30 are considered significant, >0.40 are more important and >0.50 are considered very significant. However, Aladwani and Palvia (2002) 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 is aimed to identify KM model to property management companies in Malaysia, the significant factor will be as base of the KM model.

Table IV. Knowledge management strategies model in property management companies in Malaysia.

Strategy	Characteristics
1. Attitude among Workers <ul style="list-style-type: none"> a. clear on the job task b. Discussion among peers c. Discussion with top management d. Discussion with subordinate e. Positive on professional criticism f. High spirit environment g. Self improvement 	Deal with strategies such as trust, flexibility, enthusiasm for the job, working closely with others, staff feels elated by incentive and rewards schemes provided by the organisation, staff capture and use knowledge obtained from other industry resources, staff use formal mentoring practice including apprenticeship and tolerance of failure.
2. Technology use in Organisation <ul style="list-style-type: none"> a. Intranet email b. Internal electronic forum c. Instant message d. Electronic file sharing e. Intranet portal f. Directory of expertise g. Internal newsletter h. Board 	Encompasses strategies likes using website, wireless internet connection and bulletin board.
3. Systematic Working Method <ul style="list-style-type: none"> a. Document management system b. Job workflow c. E-learning system d. Deadline system e. Memorandum f. Corrective action plan g. Self assessment process 	Include factors that deal with using spreadsheet in daily job, all responses from customer will be in close attention and dealt prior to the next testing, brainstorming, team work, work in pairs are well accepted and recognized among staff, organisation encourages the practice of understanding, documenting, archiving customer requirement and using Microsoft project to supervise property being under managed.
4. Support from Top Management <ul style="list-style-type: none"> a. Formal knowledge meeting b. Informal knowledge meeting 	Consists of strategies related to organisational issues such as fairness, supportive of employees sharing information together and autonomy.

- c. Formal knowledge culture environment
- d. Informal knowledge culture environment
- e. Session for knowledge enhancement
- f. Formal knowledge dissemination
- g. Informal knowledge dissemination

5. Knowledge Culture in Organisation
 - a. Policy on knowledge culture
 - b. Activities to support knowledge activities
 - c. Internal training and talk
 - d. Sufficient resources
 - e. Technical support facilities
 - f. Incentive and rewards
 - g. All parties involved

Deals with strategies such as 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 seminar and staff taking own initiatives to independently upgrade their competency and skills and using email as part of communication culture.
6. Thoughtful
 - a. Trust
 - b. Supportive
 - c. Caring
 - d. Forgiveness
 - e. Considerate
 - f. Courtesy

Related to the items such as always being thoughtful in organisation and fairness, decisiveness, adaptability, demanding of employees and praise of good performance.
7. Knowledge Creation
 - a. Knowledge sharing action
 - b. Knowledge blog
 - c. Organisation chart and person in charge
 - d. Knowledge sharing willingness
 - e. Enthusiasm on knowledge

Includes strategies likes staff assessment are based on their individual contribution to the knowledge development in organisation, a special task unit being formed to manage knowledge within organisation, organisation encourage staff to transfer their working knowledge to new and inexperienced staff, organizations provide incentives and acknowledgement to the staff for innovations, new ideas and sharing of experiences and staff encouraged by the organisation to

- f. Knowledge day/session continue their professional course/education
 - 8. Repository System in Organisation Deals with items such as bulletin board, internet and website.
 - a. Repository system
 - b. Personnel searching
 - c. Knowledge officer/team
 - d. Company's information system
 - e. Systematic archive
 - f. Mobile repository system
 - g. Regular audit
 - 9. Innovation Encompasses items related to norm behaviour among workers such as familiar with experimentation, being exact, and problem solving.
 - a. Special event/ family day
 - b. Workshop/ seminar
 - c. Welcome for new ideas
 - d. Appreciation
-

FINDINGS AND DISCUSSION

The survey questionnaire was filled in by respondents which comprised all levels of managers (see Table V). The highest percentages are the middle managers and junior managers which make up almost 32% of total respondents followed by managers (23%). This indicates more than one manager from each level involved in this survey for each of the companies. Meanwhile, Table VI presents the respondents profile in terms of size of organisations. Medium size type of companies dominates almost half of the total number of companies which participated in this survey. This feedback response is similar from the previous survey of this research done by the authors in 2008.

Table V. 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 VI. Respondents' Firms Profile

Size of firms	Number of firms	Number of property 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

Analysis on each company's annual report and website was based on nine KM strategies and presented in the form of KM strategies mapping. Table VII presents the KM strategies mapping based on document evident and observation. Only four companies have provided KM definition in their organisation. These definitions are usually contained in work procedure or part of the company's vision and mission. 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 and property manager. None of the companies appoint special officers solely to take care of KM.

In terms of budget, only three companies allocated budget especially for KM activities. However this budget only makes up 0.1% of annual companies' budget. To ensure the successful implementation of KM strategies, KM tools are very important to support the KM strategies agenda. However, most of the companies only provided basic tools such as Internet and electronic documents. Only a few companies are able to provide some advance tools or form such as regular meetings, in house system, management system and brainstorming sessions. Interestingly, all property management companies in Malaysia allow their staff to access the Internet but within certain limit such as only for official purpose.

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

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

companies in Malaysia. From the analysis it is shown that certain areas need to be reinforced in order to develop KM strategies model. One of the major things needs to be developed is the definition of KM in each company. This is important because organisation needs to fully understand the definition of KM and its benefit. 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 upon are the leadership of KM strategy in the organisation, KM tools and KM evaluation on organisation. These areas rely and are dependent upon one another. This survey also revealed that only company 1 have almost all of the KM strategies elements which can serve as a model for the other companies to implement KM strategies model.

Table VII. 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 client	Improve company's image to client and stakeholder.
KM Strategy	Yes	Yes	Yes	No
Leadership for KM	Property Manager (Human Resource)	Deputy Branch Manager	Branch Manager	Financial Director
Resources to Support KM Strategy	Budget (RM100 000 per year) IT Infrastructure 5 full time clerical staff to administer knowledge repository	Budget (RM 32 000) IT infrastructure 2 full time clerical staff	Budget (RM 12 000) IT infrastructure 1 full time clerical staff	No budget
Main KM Tools	Internet Intranet Fortnight meeting Electronic document Management system In house system Virtual work centre	Internet Intranet Regular meeting Electronic document Management system	Internet Intranet Electronic document Management system	Internet Electronic document
Intranet access, content management and validation approach	Access to all staff	Access to all staff	Access to all staff	Access to all staff
Barriers Links between KM and Business Performance	Organisational culture Yes	Organisational culture Yes	Organisational culture Yes	Budget problem 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 client	To improve company's performance	Provide better service for clients
KM Strategy	No	No	No	No
Leadership for KM	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 Electronic document Brainstorming	Internet Electronic document Regular meeting	Internet Electronic document Ad hoc committee Skills Yellow Pages	Internet Electronic document
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 Constraint Organisational culture
Links between KM and Business Performance	To improve supply chain process in company	Provide better service to client	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 client and stakeholder	Give better and quality service to client	Improve company's image to client and stakeholder.	Improve business profit from year to year
KM Strategy	No	No	No	No
Leadership for KM	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 Electronic document Brainstorming	Internet Electronic Document Share fair	Internet Electronic document	Internet Electronic document
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 Constraint Organisational culture	Budget Constraint Maintenance of infrastructure	Employee understanding Support from top management IT	Support from top management 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 client	More profit	Improvement of service	Better image for clients and stakeholders
KM Strategy	No	No	No	No
Leadership for KM	Property Manager	Branch Manager	Branch Manager	Branch Manager
Resources to Support KM Strategy	No budget	No budget	No budget	No budget
Main KM Tools	Internet Electronic document	Internet Electronic document Share fair	Quality circles Internet Yellow Pages Electronic documents	Internet Electronic documents 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	Budget problem No support from top management IT infrastructure Lack of understanding	Budget problem No support top management Human resource constraint	Budget Constraint Organisational Culture	Budget Constraint Organisational culture
Links between KM and Business Performance	None	None	Yes	Yes
KM Evaluated	No	No	Yes (Basic measure)	No

Multifactor analysis

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

$$\mathbf{L}_g(z, \{v_k, k=1, k_3\}) = \mathbf{L}_g(z, K_3) \\ = \text{inertia of all variables } v_k \text{ projected upon } z$$

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 $\mathbf{L}_g(z, K_3) = 0$, variable z is not correlated to any variable of the set K_3

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

Where:

\mathbf{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

Figure 1 presents the diagram of MFA data table to measure the KM strategies into property management companies. Table VIII presents the result of multifactor analysis to investigate the KM strategies model that has been identified among the property management companies in Malaysia. Each PCA consist of eigenvalue and percentage of each eigenvalue. Each KM strategy will be analysed alongside with each property management companies. Final column tabulates MFA value for each KM strategy vs. property management companies.

For company no.1, the range percentage of PCA is between 42% and 87% and only two KM strategies are considered important in this company (0.45 = more important and 0.69 = very significant; KMS 4 and KMS 1 respectively). Similar with company no. 2 and no. 10, only two 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, albeit differing KM strategies (see Table VIII). Other companies that showed at least three 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 4 KM strategies as the main KM factors, while company no.

6, no. 12 and no. 16 have shown more than 4 KM factors as the main KM factors in the 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.

KM Strategy 1		KM Strategy 2		KM Strategy 3		KM Strategy 4		KM Strategy 5		KM Strategy 6		KM Strategy 7		KM Strategy 8		KM Strategy 9	
1	k $K_1=8$	1	k $K_1=8$	1	k $K_1=7$	1	k $K_1=7$	1	k $K_1=7$	1	k $K_1=6$	1	k $K_1=6$	1	k $K_1=6$	1	k $K_1=5$
Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}	Co	x_{ik}

Figure I: MFA Data table for KM Strategies

Table VIII: Eiganvalue 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

Continued

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

Continued

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

Continued

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

To assess the linkages of each KM strategy model, correlation analyses were conducted. Table VIII presents the correlation analyses for these KM strategies model. For KM strategy 1 (KMS 1), there were strong correlation between KS1a (clear on the job task) and several strategies such as KS1e (positive on professional criticism), KS1f (high spirit environment), KS1g (encouraging) and KS1h (self improvement). Other strategies that show strong correlation were between KS1d and KS1f and KS1g (discussion with subordinate and high spirit environment and encouraging). Only KS1a (clear on the job task) was not correlated with any other strategies.

Conversely in KM strategy no. 2 (technology use in organisation), only four strategies have correlation with each other such as between KS2a (intranet email) and KS2e and KS2f (intranet portal and directory of expertise) and between KS2b (internal electronic forum) and KS2f (directory of expertise) and KS2g (internal newsletter). Other strategies were not correlated with each other. Similarly in KM strategy no. 3 (systematic working method), only a few strategies were correlated with each other (see Table VIII panel c). KM strategy no. 8 (Repository system) and KM strategy no. 9 (Innovation) also show only a few strategies which were correlated with each other. In KM strategy no. 8, only KS8b (knowledge officer/team) was correlated with other strategies such as with KS8c (company's information system) and KS8f (regular audit). While in KMS 9, KS9a (special knowledge event) and KS9b (workshop/seminar) and between KS9c (workshop/seminar) and KS9d (welcome new ideas).

Other KM strategies had shown that at least 4 strategies were correlated with each other. For KM strategy no. 4, the average correlation for correlated strategies is $r = 0.69$ with the highest correlation between KS4c (formal knowledge culture environment) and KS4e (session for knowledge enhancement) ($r = 0.87$). In KM strategy no. 6 (thoughtful), the correlated strategies were ranged between $r = 0.54$ to $r = 0.76$. While in KM strategy no. 7 (knowledge creation), most of the correlated strategies were highly correlated with each other with ranging between $r = 0.58$ and $r = 0.92$.

Table VIII. Correlation between separate PCA factors

Panel A								
PCA KM Strategy 1	KS1a	KS1b	KS1c	KS1d	KS1e	KS1f	KS1g	KS1h
KS1a	1.00							
KS1b	0.28	1.00						
KS1c	0.34*	0.24	1.00					
KS1d	0.45	0.45	0.35	1.00				
KS1e	0.47	0.32	0.56	0.34	1.00			
KS1f	0.24	0.45	0.79	0.87*	0.20	1.00		
KS1g	0.45	0.59	0.54	0.72	0.25	0.62	1.00	
KS1h	0.32	0.79	0.52	0.33	0.27	0.24	0.58*	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel B								
PCA KM Strategy 2	KS2a	KS2b	KS2c	KS2d	KS2e	KS2f	KS2g	KS2h
KS2a	1.00							
KS2b	0.21	1.00						
KS2c	0.34	0.33	1.00					
KS2d	0.33	0.25	0.32	1.00				
KS2e	0.56	0.29	0.34	0.01	1.00			
KS2f	0.76	0.54*	0.21	0.45*	0.32	1.00		
KS2g	0.45	0.55	0.45	0.00	0.24*	0.32	1.00	
KS2h	0.01	-0.27	0.21	-0.14	-0.13	0.12	-0.08	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel C							
PCA KM Strategy 3	KS3a	KS3b	KS3c	KS3d	KS3e	KS3f	KS3g
KS3a	1.00						
KS3b	0.45	1.00					
KS3c	0.21	0.34	1.00				
KS3d	0.35*	-0.05	0.33	1.00			
KS3e	0.22	-0.45	0.21	0.34	1.00		
KS3f	0.15	-0.32	0.56	0.31	0.02	1.00	
KS3g	0.18	-0.33	0.90	0.12	0.04	0.06	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel D							
PCA KM Strategy 4	KS4a	KS4b	KS4c	KS4d	KS4e	KS4f	KS4g
KS4a	1.00						
KS4b	-0.43	1.00					
KS4c	0.32	0.55	1.00				
KS4d	0.34	0.56*	0.44	1.00			
KS4e	0.56	0.34	0.87	0.12	1.00		
KS4f	0.21	0.45	0.32	0.44	0.22	1.00	
KS4g	0.45	0.12	0.22	0.34	0.23	0.90*	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel E						
PCA KM Strategy 5	KS5a	KS5b	KS5c	KS5d	KS5e	KS5g
KS5a	1.00					
KS5b	0.66	1.00				
KS5c	0.89	-0.07	1.00			
KS5d	-0.08	-0.32	0.43	1.00		
KS5e	-0.18	0.49*	0.44	0.56*	1.00	
KS5f	0.91	0.21	0.45	0.11	0.33	1.00
KS5g	0.12	0.08	0.32	0.45	0.11	0.32

Note: * Significant correlation ($p < 5$ per cent)

Panel F						
PCA KM Strategy 6	KS6a	KS6b	KS6c	KS6d	KS6d	KS6e
KS6a	1.00					
KS6b	0.43	1.00				
KS6c	0.76	0.34	1.00			
KS6d	0.44	-0.32	0.45	1.00		
KS6e	-0.03	0.02	0.17	0.67	1.00	
KS6f	-0.08	0.36	0.47*	0.59	0.54	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel G						
PCA KM Strategy 7	KS7a	KS7b	KS7c	KS7d	KS7e	KS7f
KS7a	1.00					
KS7b	0.12	1.00				
KS7c	0.87*	0.01	1.00			
KS7d	0.82	0.21	0.18	1.00		
KS7e	0.45	0.58*	0.32	0.11	1.00	
KS7f	-0.04	0.14	0.76	0.92	0.12	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel H					
PCA KM Strategy 8	KS8a	KS8b	KS8c	KS8d	KS8e
KS8a	1.00				
KS8b	0.45	1.00			
KS8c	0.32	0.87*	1.00		
KS8d	-0.18	0.34	0.21	1.00	
KS8f	-0.11	0.80	0.15	0.03	1.00

Note: * Significant correlation ($p < 5$ per cent)

Panel I					
PCA KM Strategy 9	KS9a	KS9b	KS9c	KS9d	KS9e
KS9a	1.00				
KS9b	0.76	1.00			
KS9c	-0.87	0.34	1.00		
KS9d	-0.01	0.11	0.78*	1.00	
KS9f	-0.11	0.36	0.12	0.33	1.00

Note: * Significant correlation ($p < 5$ per cent)

Representation of dimensions for knowledge management strategies

Table IX presents representation of groups for KM strategies model from multifactor analysis (MFA). The results showed which KM strategies that need to be emphasised in order for property management companies to implement the KM strategies model. From the results it is suggested that KMS 7 (knowledge creation) and KMS 4 (support from top management) are the areas that property management companies in Malaysia have to emphasise in order to ensure the successful implementation of the knowledge management strategy models. 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 model. 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 only 0.1% which indicates that most property management companies believe these strategies to be very significant with each other. Similarly with other KM strategies, with the dimensions percentage point of view, KMS 6 (thoughtful) and KMS 2 (technology), there was only 1% different from the previous rank KM strategies (51.8% and 51.5%). Moreover, the difference between these two KM strategies is less than 1%. This also shows the significance of these KM strategies together with previous KM strategies. The only KM strategies below 50% in term of representation in dimensions were KMS 1 (attitude) and KMS 8 (repository system). The range of percentage between 47% and 60% show almost all knowledge management strategies that have been developed were significant to property management companies in Malaysia. The results will provide a clearer picture to property management industry players as to which particular areas need to be emphasised in order to implement KM strategies. Thus, the organisation can plan a strategic management plan which covers all aspects of property management including management and technical aspects.

Table IX. 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 – Thoughtful	51.8
7.	KMS 2 – Technology	51.5
8.	KMS 1 – Attitude	48.6
9.	KMS 8 – Repository system	47.1

CONCLUSION

This study has widened the knowledge of KM concept theory into the real estate arena particularly in the property management business. At the same time, the concept of KM has gained popularity especially with the country's initiatives to transform her economy

from a labour intensive to a knowledge economy in order to achieve the status of a high income country. The property industry which contributes USD10.5B capital market in 2009 (until June) gives a significant contribution 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 which covers all areas of organisational management and technical aspects from top to bottom level of the organisation can support the property industry. This study is the first empirical work to examine the strategies that need to be executed in order to implement the KM concept specifically in property management companies in Malaysia. The model of KM strategies has been identified from the previous survey in 2008 and based on the model, it was tested to identify the each weighted KM strategies together with activities in each strategy by using multifactor analysis. The findings have showed that most of the strategies were significant to the property management companies in Malaysia. Correlation analysis was used to investigate the relationship between each of KM strategies activities. The findings indicate that some activities in KM strategies will give significant impact to other activities. The empirical analyses of this study will give food for thought for property management companies to strategise their KM strategies model strategic management to be put into practice in their organisations.

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