

KNOWLEDGE MANAGEMENT IN MALAYSIAN COMPANIES

马来西亚企业的知识管理

TAN Lee Peng
(陈丽萍)

Abstract

This report documents a research on knowledge management in Malaysian firms. The research consists of a survey to assess the perception of Malaysian decision makers in award-winning firms towards knowledge management. It also tried to gain an insight into the mechanisms of knowledge management adopted by successful Malaysian businesses. In addition, it is also an attempt to investigate the relationship between knowledge management and information technology, corporate size, market orientation and some management approaches such as quality management system and environmental management system in these companies.

摘要

这篇论文主要是探讨马来西亚企业的知识管理, 研究的内容包括马来西亚的企业者决策对知识管理的观念。论文将探讨若干成功的马来西亚企业所运用的知识管理内部的机制, 并分析知识管理与技术资讯、企业规模、市场趋向及管理方法, 如同在这些公司里的品质和环境管理系统的关系。

Introduction

Many factors have led to the current "knowledge boom" (Davenport and Prusak 1998). One of the driving forces is the intensive competition brought about by the increasingly globalized economy. The rapid change of technology and the growing demands of discerning consumers have forced many firms to seek a sustainable image that will distinguish them from others in the race. Companies may therefore differentiate themselves on the basis of the knowledge they possess and this means the only sustainable competitive advantage they have are actually their employees (Black and Synan 1997). Hence firms are rapidly devising ways to tap into the knowledge possessed by their employees and to manage them to produce quality service and products to win customers. All these imply the need for good knowledge management.

Knowledge management had in fact started several decades ago, but it was only in the late 1990s that it had been stressed as a major asset of a company (Bollinger and Smith 2001). As stated by Cummings and Worley (2001), knowledge management and organization learning are among the most widespread and fastest-growing strategic interventions to help organizations to develop, change, and improve continuously. For a business company, the prime concern now is to become an effective knowledge-based organization. This does not mean that profits and products are no longer important. On the contrary, without effective knowledge management and organization learning, profits are no longer sustainable.

In the context of business, "knowledge" is viewed in terms of "tacit knowledge" and "explicit knowledge". Nonaka (1991) claims that product innovation results from interaction between tacit and explicit knowledge. But what is tacit and explicit knowledge? According to Polangi (1996), tacit knowledge is usually in the domain of subjective, cognitive and experiential learning, while explicit knowledge deals with more objective, rational, and technical knowledge such as data, policies, procedures, software and documents. These concepts have since been adopted to explain knowledge development.

A review of the literature suggests that there is no one unique definition of knowledge management. Marquardt (1996) defines knowledge management as the management of acquired and generated knowledge of the organization. This includes the acquisition, creation, storage, transfer, and utilization of knowledge. Ganesh (2001) refers to knowledge management as a process of knowledge creation, validation, presentation, distribution, and application. Both these definitions view knowledge management as processes. Beijerse (1999) defines the term with a more

holistic approach. He views knowledge management as "achieving organizational goals through the strategy-driven motivation and facilitation of knowledge workers to develop, enhance and use their capability to interpret data and information (by using available sources of information, experience, skills, culture, character, personality and feeling) through a process of giving meaning to these data and information".

Knowledge management is not limited to tracking existing knowledge but is also intended to promote and support the creation of new knowledge that will contribute to innovation, and which acts as one of the business success factors (Duffy 2000; Frey 2001). These were also stressed in Beijerse's (2000) model of knowledge management process which had further included the determination of knowledge necessity, availability and gap of knowledge, all of which help in knowledge development and acquisition.

Pervaiz *et al.* (1999) proposed a knowledge management model founded upon a continuous improvement methodology utilizing Deming's "plan, do, check, and act" (PDCA) cycle. He proposed that during the planning stage, knowledge should be captured or created (p). After which the organization shall share the knowledge (do), measure the effects (check), and ultimately the organizational members learned and gradually improved themselves (act).

Skyrme (1997) observes that there are ten characteristics which distinguish the knowledge "leaders" from the "laggards" in determining an organization's "success with the knowledge agenda". It is essential to set up a systematic knowledge management to cater for a culture of "openness and inquisitiveness that stimulates innovation and learning". This is also put forward by Newman (2002), who concurs that to stay ahead in business, one must create new forms of knowledge. This is to say that knowledge leadership is the all important factor to win in a competitive environment.

"Knowledge management" is an area of specialized study that is well researched and documented in industrialized countries. However, for an emerging country like Malaysia, the subject is relatively new. It is therefore necessary to study knowledge management in general, and then to assess the attitude of Malaysian business decision makers towards knowledge management in the context of the national aspiration to become a knowledge-based economy.

In this study, "knowledge management" is defined as a process of knowledge acquisition and creation, conversion, and storage within the organization and knowledge acquisition, sharing and transfer within and outside the organization that may involve customers and suppliers, to achieve organizational goals. This study on

knowledge management in Malaysian firms is based on a survey to assess the perception of Malaysian decision makers in award-winning firms towards knowledge management. In so doing, it will seek an insight into the knowledge management process among successful Malaysian enterprises and to understand the relationship between knowledge management and information technology, corporate size, market orientation and selected management approaches such as quality management system and environmental management system in the companies under study.

The Approach of the Study

This study focuses mainly on knowledge creation and distribution. It draws upon the study by Nonaka and Takeuchi (1995) who emphasize the importance of the knowledge creation process. It also takes into account the study of Davenport and Prusak (1998) whose stress is on the knowledge distribution mechanism where knowledge must be codified into "explicit" knowledge, while "tacit" knowledge that cannot be codified should be transferred via human interaction. The approach of this investigation is then based on these two major studies. In addition, Malaysian decision makers' perception of knowledge management will be analysed according to the "COST" model which emphasizes the involvement of customers and suppliers, the organization's management support system, and information technology. Other factors such as quality and environment management system, corporate size, and domestic or export market orientation that may affect the knowledge management process will also be investigated.

To facilitate comparisons, this study distinguishes Malaysian business into Small and Medium Enterprises (SMEs) and non-Small and Medium Enterprises (non-SMEs). An SME, as defined by the Malaysia Industrial Development Authority (MIDA), is a firm with not more than RM2.5 million paid-up capital and having fewer than 75 employees (MIDA Report, 1998/1999). There is no clear-cut criterion to distinguish between domestic-oriented and export-oriented firms in the Malaysian context. For the purpose of this study, an export-oriented firm is taken to be one that exports more than 50 per cent of its products or services.

The Hypotheses

The Influence of Culture

Studies by Hedlund and Nonaka (1993) and Hedlund (1994) compared the modes of knowledge management between Western and Japanese firms and attributed the differences to the influence of their business cultures. Their findings imply that decision makers operating under different business cultures may have different influence on knowledge management in the firm. As such their attitude towards knowledge management should be viewed as an important factor. Starting on this premise, the following null hypothesis on the perception of Malaysian managers towards knowledge management is examined.

Hypothesis H1: Managers in Malaysian firms do not perceive
that knowledge management is mandatory for success

Relationship of Knowledge Management with TQM, ISO 9001 and ISO 14001

Total Quality Management (TQM) programme, ISO 9001 Certification and Environmental Management System (mainly conforming to ISO 14001) have always been found to have contributed significantly to the success of an organization in terms of competitive advantages, cost reduction, operations efficiency, improvement of image, among others (Rebecca 2000; Tan 2002). Whether these systems bear any influence on knowledge management in the selected Malaysian firms will be of interest here. The following hypotheses thus are considered:

Hypothesis H2a: TQM does not play a critical role in the success
of knowledge management in these companies

Hypothesis H2b: There is no difference in knowledge management
between companies certified with ISO 9000

Hypothesis H3: Environmental management system (or ISO 14001 registration)
does not play a critical role in the success of knowledge
management in these companies

The Influence of Information Technology

According to Frey (2001), the first wave of knowledge management activities in both Europe and the United States (US) was focused largely on information technology (IT). Nonetheless, some technology experts and scholars noted that there is no direct correlation between IT investment and knowledge (Malhorta, 1998). In

this light, it will be interesting to know whether IT plays a significant role in knowledge management for Malaysian firms. Hence, the following hypothesis is included:

Hypothesis H4: Information technology is not perceived to have played a critical role towards the success in knowledge management in these companies

Corporate Size

Studies by Peters and Waterman (1982) and Gooding and Wagner III (1985) show that the influence of corporate size appears to be different in accordance with the choice of variables. Therefore, in order to test for this factor in Malaysian companies, the following hypothesis has been added:

Hypothesis H5: Corporate size does not affect knowledge management in the companies studied, i.e. there is no difference in knowledge management between SMEs and non-SMEs

Knowledge Conversion

Nonaka and Takeuchi (1995) emphasize the role of "socialization" mode of knowledge conversion. For Western organizations, they show that firms prefer the "combination" mode where explicit knowledge is transformed to new explicit knowledge and distributed to the whole organization. To verify this finding in the Malaysian context, the following hypothesis will be tested:

Hypothesis H6: There is no particular form of knowledge conversion preference in Malaysian firms

Export and Domestic–Market Oriented Companies

Khong's (2001) research of twenty Malaysian firms indicates that there is no difference in knowledge management process between export-oriented and domestic-market oriented companies. To further confirm this, the following hypothesis is tested:

Hypothesis H7: There is no difference in the knowledge management process between export-oriented and domestic-market oriented companies

Research Methodology and Data Development

This research is based on a nationwide questionnaire survey. Due to the low response rate, the small sample size does not allow statistical manipulation beyond simple analysis. Basic statistical techniques that are used include descriptive statistics and one sample and independent t-test. For the purpose of analysis, the missing values of a particular item are represented by its median value.

A two-stage stratified cluster sampling is employed to select the target firms in the survey. Three clusters were selected in the first stage. The first cluster comprises Malaysian organizations that were winners of "Enterprise 50" awards (see Appendix 1) from 1999 to 2001. In 2001, 41 out of the 50 enterprises were headed or managed by Chinese chief executive officers or managing directors. The second cluster is made up of the members listed on the Federation of Malaysian Manufacturers (FMM) online directory. The last cluster comprises firms registered online with the Small and Medium Industries Development Corporation (SMIDEC). The second stage involves a random selection of respondents from each cluster. The respondents are senior personnel who are also the decision makers of their business.

Questionnaires were sent to more than 430 firms through e-mail or facsimile. Only 38 replies were received, representing a response rate 8.7 per cent. Of these, 25 were firms in the "Enterprise 50" category. There were six SMIDEC registered companies, and seven were members of FMM. Companies judged as "50 Enterprise" are considered successful based on stated criteria. One of the original intentions of this study is to compare knowledge management in award-winning enterprises and ordinary ones. As the response rate from non-award winning companies is too low to allow meaningful comparison, the study is confined to the 25 award-winning enterprises. Cronbach's alpha was used as the reliability tests of each composite group of questions to measure internal consistency, so as to determine if the same group of respondents score similarly on the various items (inter-items) in each composite. The resulting Cronbach's alpha for each relevant composite is greater than 0.6. and this is commonly acceptable as sufficient to indicate that most of these composites are reliable. The small sample may constitute the majority of firms with knowledge management emphasis in the country. Therefore the findings in this study may be useful in shedding light on the experience in knowledge management of successful enterprises and to yield lessons for the business community as a whole.

The Research Findings

Profile of Companies

Based on the definition given by MIDA (1998), one-quarter the firms in this study are SMEs and others are large corporations. The sample covers a range of industries comprising eight electronic and electrical companies, three companies each in the chemical and packaging industries, two each in the pharmaceutical and food and beverage industries, and one company each in mechanical engineering, consultancy, textiles and apparel, oil and gas, architecture design, advertising, and surgical supplies.

Manager's Attitude towards Knowledge

Most of the respondents (83%) have heard of knowledge management. From their answers to questions concerning competitiveness, it is revealed that knowledge is one of the most important factors contributing to the competitiveness of their organizations. Three-quarters of the respondents have taken some measures to determine the type of knowledge that their companies need in order to realize their corporate strategy. Common means by which to acquire the necessary knowledge would include analyses of the industry environment, global economic environment, the competitors and their products, as well as determining technological changes that affect an organization's business strategy. They also make use of international management standards such as ISO 9001 or Hazard Analysis Critical Control Points (HACCP).

Some of the respondents confirm that they rely on the setting up of business systems such as Supply Chain Management (SCM), Customer Relationship Management (CRM), Enterprise Resources Planning (ERP) and human capital to determine the type of knowledge their company would need in realigning their company strategy. Seven out of ten respondents have determined the type of knowledge with which their organizations are familiar through such programmes as TQM, SCM, CRM, ERP, benchmarking against best practices, documentation management system, internal survey forum, performance appraisal and creative problem solving processes. Some firms have gone a step further in starting to develop knowledge management policy and to establish some principles and rules of thumb to determine the pool of knowledge in their company.

Seven out of ten respondents have taken measures to determine the type of knowledge possessed by their staff. This takes the form of such practices as annual

performance appraisal, project progress assessments, and determining employees' concerns and ideas. Other means include the empowerment of employees to act and to strive to gain ISO 9001 compliance status. Some rely on the conventional approach of referring to the formal qualifications and experiences of their employees. Several companies also carry out training needs analysis and development of knowledge management platform.

The findings show that knowledge is mainly gained from external sources. The external sources mentioned are the customers (96%) and suppliers (92%). This is in line with the result of an empirical study by Yeung *et al.* (1999). Yeung's study reveals that organizations learnt through competency acquisition by involving key customers in their training programmes. Through this process, experimentation occurs via customer requests or challenges, and continuous improvement happens through feedback from customers. In addition, the majority of Malaysian firms also derive knowledge from their employees (75%) and from the organization itself (79%).

The majority of the respondents (92%) perceived that they had acquired knowledge, while almost all (96%) perceived that they had developed knowledge in the course of work because the senior personnel had emphasized the need to acquire and create knowledge.

Thus it is clear the decision makers of Malaysian firms in the sample size are keenly aware of knowledge management. They agree that knowledge is important and put in a great deal of efforts towards establishing a knowledge-based organization.

Manager's Perception of the Knowledge Management Process

Knowledge Acquisition

The level of perception of the respondents on the presence of knowledge management in their organizations is measured on a five-point scale (Table 1). Generally all the respondents perceived that there was knowledge management effort in their company, as the mean scores for all items exceed the median value of 3 (neutral). By ranking the mean scores, knowledge acquisition from customers ranks first with a mean score of 4.25, with knowledge acquisition from within the organization, with a score of 4.08, coming second; next in rank is knowledge creation (mean score of 3.96) which is seen to be given greater emphasis than knowledge sharing with customers (mean score of 3.88). Knowledge sharing within

Table 1: Mean Score of Manager's Perception on Knowledge Management

	Mean Score	Std. Deviation
1. Knowledge Acquisition – Customer Our company regularly conducts surveys to obtain customer opinion on our responsiveness to their needs	4.25	0.61
2. Knowledge Acquisition – Organization	4.08	0.74
a The management supports the vision of knowledge management in the organization	4.17	0.70
b The management is aware of the need to retain important organizational knowledge	4.33	0.56
c We reward people for knowledge acquisition	3.96	0.95
d We reward teams for knowledge acquisition	3.88	0.80
e Employees are trained and coached on how to capture knowledge in their daily work	4.17	0.56
f Sales force constantly monitor trends outside the company by looking at what others are doing	4.12	0.61
g We have accessible systems to collect internally information for business decision-making	4.08	0.78
h We have accessible systems to collect externally information for business decision-making	3.92	0.93
3. Knowledge Acquisition – Supplier	3.52	0.63
a We involve suppliers in meetings for the purpose of knowledge creation/acquisition	3.71	0.62
b We involve suppliers in supplier development programmes for knowledge creation/acquisition	3.33	0.64
4. Knowledge Acquisition – Information Technology We recognize that IT is the best information utility for knowledge acquisition	3.71	0.91
5. Knowledge Creation – Organization	3.96	0.45
a Employees are trained in the skills of creative thinking	4.00	0.50
b Employees are trained in the skills of innovation in their work	3.92	0.41
6. Knowledge Storage – Information Technology	3.98	0.69
a We have established ways to document and store information	4.08	0.58
b We recognize that IT is the best information storage utility for knowledge sharing	3.87	0.80
7. Knowledge Sharing – Customer	3.88	0.86
a We encourage mutual knowledge sharing with customers	4.12	0.74
b We facilitate knowledge sharing with customers	3.63	0.97
8. Knowledge Sharing – Within Organization	3.80	0.71
a The management is aware of the need to share organizational knowledge with others	4.12	0.74
b The management designs ways to share knowledge throughout the organization by systematic job rotation	3.67	0.76
c The management designs ways to share knowledge throughout the organization by structured on-the-job training system	4.00	0.59
d Employees are trained and coached on how to store/share or utilize knowledge in their daily work	3.96	0.62
e We reward people for knowledge sharing	3.67	0.76
f We reward teams for knowledge sharing	3.58	0.72
g We reward people for helping others to find ways to share knowledge	3.63	0.77

9. Knowledge Sharing – Supplier	3.69	0.79
a We encourage mutual knowledge sharing with suppliers	3.83	0.70
b We facilitate knowledge sharing with suppliers	3.54	0.88
10. Knowledge Sharing – Information Technology	3.86	0.90
a Employees are given the freedom to search for information via ICT or related facilities to meet their needs	3.71	0.91
b We provide information infrastructure (e.g. software and hardware facilities) to facilitate the knowledge-sharing process	4.00	0.88
11. Knowledge Transfer – Organization	3.98	0.60
a Cross-functional teams are used to transfer important knowledge across groups	4.04	0.62
b Cross-functional teams are used to transfer important knowledge across departments	3.92	0.58

Score on a five-point scale: 1 = "strongly disagree" and 5 = "strongly agree"

the organization turns out to rank lower than sharing knowledge with customers. The results does not reflect the importance of knowledge sharing with suppliers as this item is ranked the lowest with an average score of 3.69.

Consistent with the findings in the previous section on sources of knowledge, the acquisition of knowledge from customers has the highest mean score (item 1 in Table 1). This again implies that the most important source of knowledge are the customers. These companies have placed more emphasis on surveying customers regularly in order to obtain their opinion, rather than through the suppliers in the supplier meetings or supplier development programmes. Hence, among the external parties, the customers seem to play a more vital role than the suppliers as a source from which to acquire knowledge. Similarly, it is the customers rather than the suppliers who appear to be given a higher priority for the knowledge sharing process. This may be because these firms perhaps have not implemented concepts such as TQM or SCM where knowledge sharing with suppliers forms an integral part of business operations. The survey further indicates that the senior management in these companies are in favour of rewarding people and teams for knowledge acquisition more than knowledge sharing.

A mean score of 4.33 for the statement "Top management is aware of the need to retain organizational knowledge" (item 2b in Table 1) indicates that the senior management of Malaysian organizations is keenly aware of the importance of knowledge conservation in their companies. Available too are management support systems such as training and coaching on knowledge capturing, and reward for knowledge acquisition. In addition, on-the-job training, cross-functional teams and rewards are used to encourage knowledge sharing and transfer.

The study also found that brainstorming, heads of department meeting, monthly

or quarterly business review, and suggestion scheme are held to gather information. Systems such as ERP, Human Resource System, Accounting System, Customer Planning System, Purchasing Control System, Lotus Note, Wide Area Network, Chip Board System, and ISO 9001 are used to facilitate the internal information collection process for business decision making.

The companies would adopt various approaches to collect information externally for business decision making. The common approaches are to go through affiliate companies, business research, collaboration with universities, international conferences, engagement of consulting services, as well as information search through Internet. Their sales personnel would also monitor market trends by various means such as gathering feedback from customers, collecting supplier information, reference to business journals, making use of marketing intelligence, browsing competitor's website, employing benchmarking and participating in trade fairs.

Knowledge Creation and Distribution

In addition, a mean score of 3.96 for item 5 (knowledge creation) in Table 1 also indicates that the top management of Malaysian companies realize the importance of creative thinking and innovation. They encourage cross-functional teams to transfer important knowledge either among groups or departments.

The survey also detects knowledge distribution activities within the firm. This is done by means of on-the-job training and in storing or sharing knowledge. Both these variables show a high mean score of 4 or only just below 4. These scores imply that training is used to effect knowledge distribution within the firm.

The sharing of knowledge with customers also features as part of the strategy in knowledge management of companies. This is facilitated by holding "creative" workshops, lectures, direct mailing, customer and supplier "development meetings" and information diffusion through company websites. In addition, knowledge sharing with suppliers is achieved through meetings or conferences or through supplier linkage programmes, product specifications and vendor performance evaluation.

The Relationship between Scale of Operation, IT Management, TQM and Knowledge Management

To test whether knowledge management is perceived as mandatory for the success of the companies and whether managing information technology is seen to have played a critical role towards the success in knowledge management, one

sample t-test with preset median value of 3 is used to test Hypotheses H1 and H4. The test result indicates that the relevant mean values are significantly higher than 3 (with $p < 0.001$) (Table 2). This means that Hypotheses H1 and H4 are rejected, implying that Malaysian managers do consider that knowledge management is mandatory for the success of their companies and managing information technology is seen as playing a critical role in achieving success in knowledge management.

Table 2: One-sample t-test -Information Technology Management as Critical Factors for Success of Knowledge Management

	Means	Test Value	Degree of freedom	Significant (2-tailed)
Knowledge Management Process	3.88	3.00	23	0.00*
Information Technology Management	3.91	3.00	23	0.00*

Score on a five-point scale: 1 = "strongly disagree" and 5 = "strongly agree"

* The mean difference is significant with test value 3, at the 0.05 level

Next, tests are carried out to examine the influence of the scale of business operations, market orientation, ISO systems and TQM on knowledge management measured by the mean score value. Independent t-test is applied to test Hypotheses H2, H3, H5 and H7.

Test results on the above-mentioned null hypotheses (H2, H3, H5 and H7) as shown in Table 3, indicate that the perceived differences are not significant statistically (at $\alpha = 0.1$ level) and thus these null Hypotheses should be accepted. This implies that there is no perceived significant difference in knowledge management process between SMEs and non-SMEs firms. It also implies that corporate size is perceived to have no effect on knowledge management in these Malaysian firms. There is also no perceived significant difference between knowledge management in domestic-oriented and export-oriented firms.

Table 3 shows that the hypothesis (H2b) that there is no difference in knowledge management between companies certified with ISO 9001 standards and those that do not is also accepted. Similarly, it cannot be established whether there is any perceived significant difference between those firms that implement TQM and those that do not (H2a). However, these results are by no means affirmative; a larger sample would be necessary to confirm the perceptions.

Further examination of the responses shows that some links are evident. On the question relating to TQM, several companies have actually used "quality

Table 3: Independent-samples t-test Results on Influence of Scale of Operations and Management Systems on Knowledge Management

	Means	Degree of freedom	Significant (Sig.) at $\alpha = 0.1$ level (2-tailed)
H2a: TQM programme is implemented in the organization TQM programme is not implemented in the organization	3.83 3.92	22	0.61
H2b: The organization is ISO 9001 certified The organization is not ISO 9001 certified	3.87 3.90	22	0.90
H3: The organization is ISO 14001 certified The organization is not ISO 14001 certified	4.24 3.82	22	0.13
H5: SME Non-SME	3.90 3.87	22	0.90
H7: Export-oriented Domestic market-oriented	3.90 3.86	22	0.84

procedure". More than half of the companies have actually implemented TQM and are registered with ISO 9001 or 9002. Some confirm that they rely on ISO 9000 system to determine the type of knowledge possessed by their employees. Others benefit from ISO 9001 implementation to collect internal information or information existing in the firm. Only three companies have registered with ISO 14001 and another three intend to do so "within the next five years".

Knowledge Conversion

The study also deals with questions on three different forms of knowledge conversion. The first is "internalization", defined as transformation of explicit knowledge to tacit knowledge. The second is "externalization" or transformation from tacit knowledge to explicit knowledge. The last is a "combination" form that defines the transformation from explicit knowledge to new explicit knowledge.

Based on the results shown in Table 4, it may be concluded that there is no particular form of knowledge conversion employed by Malaysian firms in the sample study, as the relevant hypothesis (H6) is accepted. However, a scrutiny of the mean score values reveals that "internalization" is the form of knowledge conversion most preferred by the firms concerned. The "externalization" form of conversion is the next preferred, and the "combination" form is the least preferred form.

Nonaka and Takeuchi (1995) suggest that "socialization", defined as

Table 4: Mean Score for Perception on Knowledge Conversion

	Mean Score	Standard Deviation
1. Explicit Knowledge to New Explicit Knowledge (Combination)	3.98	0.76
Standard template	3.42	0.93
Rules and procedures	4.54	0.59
2. Explicit Knowledge to Tacit Knowledge (Internalization)	4.52	0.62
Learning by doing	4.46	0.66
On-the-job training	4.58	0.58
3. Tacit Knowledge to Explicit Knowledge (Externalization)	4.13	0.85
Checklist or job aids from peers and supervisors	4.08	0.83
Problem solving with supervisors	4.17	0.87
4. Tacit Knowledge to New Tacit Knowledge (Socialization)	3.30	0.95
Brainstorming session	3.79	1.14
Structured critiquing session	2.54	0.93
Experiences swapping session	2.71	1.00
Learning through observation	4.13	0.74

Score on a five-point scale: 1 = "never" and 5 = "always"

transformation of tacit knowledge to new tacit knowledge, is an important means of knowledge conversion in Japanese firms. Contrary to this finding, evidence among Malaysian firms shows very little emphasis being placed on the "socialization" process.

In general, "on-the-job training" with the highest means score of 4.58 (Item 2 in Table 4) is the most common knowledge conversion practice employed by Malaysian companies. Apart from this, knowledge is transformed frequently through "rules and procedures", "learning by doing", "problem solving with supervisors", "learning through observation" and "checklist or job aids from peers and supervisors".

Further examination, based on frequency distribution, reveals that the SMEs appear to prefer the "combination" process of knowledge conversion, with all the companies surveyed confirming that they "frequently" convert "explicit knowledge to new explicit knowledge". On the other hand, non-SMEs seem to prefer "internalization" of knowledge process.

IT Utilization

Malaysian companies employ various types of IT in knowledge management, mainly in communication, internal and external information search, knowledge capturing, knowledge storage and sharing, documentation, design, research and development.

The most commonly used is the Internet (96%), showing the vital role played by this communication technology in today's borderless business world. Other frequently used methods include such document management systems as purchasing and accounts system (92%), production planning (83%), and quality procedure (71%). Others like decision support system (17%) and groupware (13%) are less often used. Most of the companies in the sample make use of various information systems. These include Material Resources Planning, Computer Integrated Manufacturing System, Computer-aided Design and Computer-aided Manufacturing (CAD-CAM), SCM, CRM, and ERP.

Conclusion

The findings in this study indicate that decision makers of Malaysian companies are like their counterparts in industrialized countries in their keen awareness of knowledge management. They regard knowledge as one of the critical success factors of their companies and the most of them have taken serious efforts to determine the type of knowledge by which to realize their business strategies. All the sample companies have their own knowledge management systems and some form of knowledge leadership is detected among senior management staff. In terms of the sources of derived knowledge, customers are the most preferred source, followed by suppliers, employees and the organization itself.

In an age when TQM and SCM seem to be the norms, knowledge sharing with suppliers is expected to be highly important. However, TQM and SCM implementation was not as common as in industrialized countries. This may explain why knowledge sharing with suppliers ranked lowest in this study.

In terms of management support, on-the-job training and cross-functional teams are frequently adopted to share and transfer knowledge. In addition, it is found that IT and its management play a significant role in knowledge management.

Corporate size and environmental management systems are found to have no significant effect on the knowledge management process of Malaysian firms. There is also no conclusive relationship between quality management and knowledge

management, except for some links between the use of quality procedure and ISO 9000 system to determine the type of knowledge possessed by employees and to gather and conserve knowledge existing within the firm.

The survey also indicates that there is no particular form of knowledge conversion preferred in Malaysian companies. However, the transformation of either tacit or explicit knowledge to the mode that is accessible to everyone appears to be a more frequent form of knowledge conversion activity. Evidence suggests that there is very little emphasis placed on the "socialization" process of knowledge conversion that is often found in Japanese firms. Rather, knowledge creation could have been given more emphasis.

The findings in this study should be interpreted with two limitations in mind. Despite efforts to reach a large number of firms, only 38 responded. Consequently, the analysis based on the results of this research is confined to the successful companies, namely, those that possess the "Enterprise 50" award. No attempt has been made to compare award-winning and other companies. This will require separate studies to provide a more complete picture of knowledge management in this country.

Secondly, this study does not discuss the knowledge management process of the intra-functional group within the firm. All answers pertaining to each company were provided by a single senior management staff and the possibility of differences in perception among management staff in different functional areas within the same company has not been taken into account. This shortcoming again calls for further investigations.

In addition, in view of the importance of knowledge management in the emerging k-economy, to ensure effective knowledge management in Malaysian businesses, there is a need to ascertain what constitutes critical success factors in knowledge management. Further studies perhaps using the Analytic Hierarchy Programming (Saaty, 1988) to make pair-wise comparison between factors to determine a set of critical success factors will be a step in the right direction.

References

- BEIJERSE, R. P. Uit 1999. Questions in knowledge management: defining and conceptualizing a phenomenon, *Journal of Knowledge Management*, 3 (2): 94-109.
- 2000. Knowledge management in small and medium sized companies: knowledge management for entrepreneurs, *Journal of Knowledge Management*, 4 (2): 162-179.
- BLACK, D.H and SYNAN, C.D 1997. The learning organisation: the sixth discipline?,

- Management Accounting British*, 75 (10), 70-72.
- BOLLINGER, A. S. and SMITH R. D. 2001. Managing organizational knowledge as a strategic asset, *Journal of Knowledge Management*, 5 (1), 8-18.
- CUMMINGS, Thomas G. and WORLEY, Christopher G. 2001. *Organization development and change*, Ohio: South-Western College Publishing.
- DAVENPORT, T.H and PRUSAK, L. 1998. *Working Knowledge: How Organization Manage What They Know*, Boston: Harvard Business School Press.
- DUFFY, J. 2000. Knowledge to be or not to be?, *The International Management Journal*, January 2000.
- FREY, R. S. 2001. Knowledge management: Proposal development, and small businesses, *Journal of Management Development*, 20 (1), 38-54.
- GANESH, D. Bhan 2001. Knowledge management in organizations: examining the interaction between technologies, techniques, and people, *MCB University Press*, 5 (1): 68-75.
- GOODING, R. Z. and Wagner III, J.A. 1985. A meta-analytic review of the relationship between size and performance: The productivity and efficiency of organizations and their subunits, *Administrative Science Quarterly*, December: 462-481.
- HEDLUND, G. 1994. A model of knowledge management and the N-form corporation, *Strategic Management Journal*, 15: 73-90.
- and NONAKA, I. 1993. Models of knowledge management in the West and Japan. In *Implementing Strategic Processes*, edited by P. Lorange, Oxford: Blackwell.
- KHONG Lai Yee 2001. *Knowledge Management in Twenty Malaysian Organizations*, unpublished MBA thesis, University Malaya, Kuala Lumpur.
- MALHORTA 1998. Tools at work: deciphering the knowledge management hype, *Journal for Quality & Participation*, 21 (4): 58-60.
- MARQUARDT, Michael J. 1996. *Building the Learning Organization: A System Approach to Quantum Improvement and Global Success*, New York: McGraw-Hill.
- Malaysia Industrial Development Authority (MIDA) 1998. *Malaysia International Trade and Industry (MIDA) Report, 1998/1999*.
- NEWMAN 2002. The knowledge opportunity, *Knowledge Management*, March. EBSCO Publishing.
- NONAKA, I. 1991. The knowledge-creating company, *Harvard Business Review*, 69, November-December: 96-104.
- and TAKEUCHI, H. 1995. *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*, New York: Oxford University Press.
- PETERS, T. J. and WATERMAN, R. H. 1982. *In Search of Excellence*, New York: Harper & Row.
- PERVAIZ, K. Ahmed, LIM Kwang K. and MOHAMED Zairi 1999. Measurement practice for knowledge management, *Journal of Workplace Learning*, 11 (8): 304-311.
- POLANGI, M. E. 1996. *The Tacit Dimension*, London: Routledge & Kegan Paul.
- REBECCA FATIMA, Sta. Maria 2000. *Perception of Learning Culture, Concerns about the Innovation, and Their Influence on Use of An On-going Innovation in the Malaysian Public Sector*, unpublished Ph. D. Dissertation, University of Georgia.
- SAATY, T. 1988. *The Analytic Hierarchy Process*. New York: McGraw-Hill.
- SKYME, David and AMIDON, Debra 1997. The knowledge agenda, *The Journal of Knowledge Management*, 1 (1): 27-37.
- TAN Lee Peng and Gilbert SIA Lim-Teck 2001. ISO 9000: The answer for total quality

management implementation? The Malaysian Case, *Total Quality Management*, 12 (2): 223-229, Routledge, Taylor and Francis Group, U.K.

YEUNG, Arthur K., ULRICH, David O., NASON, Stephen W. and GLINOW, Mary Ann Von 1999. *Organizational Learning Capability*, New York: Oxford University Press.

APPENDIX 1

ENTERPRISE 50 AWARD PROGRAMME

Enterprise 50 is an annual award programme organized by Accenture and the Small and Medium Industries Development Corporation (SMIDEC) in Malaysia. RHB Bank is a supporting sponsor and *Business Times* is the official publication.

Objectives

Enterprise 50 was introduced to:

- Recognize forward looking, independent local enterprises and encourage them to embrace relevant technology, operate effectively and position themselves for future challenges
- Provide the opportunity to pay tribute to successful local enterprises and make them role-models for others
- Help foster and encourage the spirit of enterprise that is vital to the nation's continued growth and prosperity
- To elevate the image of these local enterprises thereby offering them a better chance at improving their image and recruiting efforts against the bigger and more attractive MNCs

Participation

- Open to all homegrown, and locally incorporated companies with at least 40 per cent local equity
- Must not be listed on any Stock Exchange, including Mesdaq
- Can either be a parent company or a subsidiary (if a parent company participates, all subsidiaries will not be eligible)
- Must have audited financial track records for three years

Companies are evaluated based on the following information:

- Management outlook
- Major innovations
- Market presence
- Information communication technology usage
- Operating profit before tax
- Gross turnover
- Profit growth over last three years
- Turnover growth over last three years
- Return on assets
- Export revenue/turnover
- Investments in capital/training and research and development

Benefits of the Award

- Receive the Enterprise 50 award trophy and certificate at an award dinner
- Be automatically adjudicated to the Prime Minister's Industry Excellence Award
- Able to use the Enterprise 50 logo on your company collateral
- Be featured in the Enterprise 50 Homepage
- Receive publicity coverage from *Business Times* and other media
- Be part of the Enterprise 50 Alumni