

Technological infrastructure for Knowledge Management

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Abstract

Interest in the topic of knowledge management has undoubtedly boomed over the last few years. There are clearly organizational trends, which are aligned to this focus, and several initiatives were taken along the process. Besides that, technology is undeniably becoming a significant tool for gearing knowledge management in organizations. The consideration of technology led to the usage of technological infrastructure intensively. However, the knowledge management literature paid little attention to the issues and focuses on technology infrastructure. This paper attempts to study on the technological infrastructure used in the selected organizations in Malaysia. Eight technological infrastructures were identified such as Internet, Intranet, Document Management Systems (DMS), Groupware, Data Warehousing/mining, Decision Support Systems (DSS), Extranet and Unifying Messaging System (UMS) to be the technological infrastructures for knowledge management. The results from the preliminary study are then shown in the descriptive form. Finally, the paper draws conclusion and suggestions for creating and sustaining knowledge management by using those technological infrastructures.

INTRODUCTION

In this highly competitive market, most organizations are realizing how important knowledge is as a source of lasting competitive advantage and how they are able to make maximum use of this one sure source. According to Hogberg (1998) in order to survive in the future, organizations or corporations will need a knowledge network that captures and stores all knowledge, innovations and new ideas that are created, and distributed to the right people, so that it can be reused and create more value. A successful corporation is a knowledge- creating corporation; that is, one, which is able to consistently produce new knowledge, to disseminate it throughout the company and to embody it into new products, or services quickly. Therefore, the ability of organizations or corporations to undergo the process of knowledge transformation is vital.

LITERATURE REVIEW

Knowledge as the result of learning needs to be intentionally and effectively managed in order to produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly. Knowledge management is the process of systematically and actively managing and leveraging the stores of knowledge in an organization. Knowledge management also has been regarded as the art of transforming information and intellectual assets where it is about accessing the intellectual capital of the firm and bringing it to the clients. In line with this, Wiig (2000), listed three perspectives of knowledge management in organization: business perspective – which focuses on why, where, and to what extent the organization must invest in or exploit knowledge; management perspective – which focuses on determining, organizing, directing, and monitoring knowledge-related activities required to achieve the desired business strategies and objectives; and hands-on operational perspective – which focuses on applying the expertise to conduct explicit knowledge-related work and tasks. The goal of knowledge management is to leverage knowledge assets from one problem domain to another, and from one user to another. It also attempts to make knowledge recyclable, accessible and expanding resources.

Actually, knowledge management has been discussed in a number of ways such as, the economic level, knowledge-based view and the strategic level, which focuses on the firm's, sustained advantage over its competitors (Armistead, 1999). In business terms knowledge management is concerned with managing the underlying knowledge development where it is the identification of knowledge needs and assets, knowledge problems and opportunities. The major aspects of knowledge management are to meet the existing and emerging needs, and develop new opportunities and strategies that encompasses the people aspects, organizational aspects, information accessible aspects and technology aspects. According to Malhotra (1998) knowledge management caters to the critical issues of organizational adaptation, survival and competence in the face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings. Besides that, knowledge management also has been regarded as the art of transforming information and intellectual assets where it is about accessing the intellectual capital of the firm and bringing it to the clients.

Knowledge management is a complex process that must be supported by a strong foundation of enablers. The enablers for knowledge management are strategy and leadership, culture, measurement, and technology (APQC, 1997). Whereas, Offsey (1997) classified the enablers as hard and soft skills. Hard skills focused on leadership and culture, while soft skills focused on technology, and measurement. He emphasized that successful knowledge management programs required both skills. Most discussion to date has shown that both skills are necessary to enable knowledge management processes.

Apart from that, Bhatt (2000) mentioned that knowledge composed of people, technology and process, where 70% of the effort required is related to people issues, 20% is process while only 10% is technological effort. Although the percentage of technology is the least of the elements that does not mean that it is the least important of the elements. The point is that technology element is probably the easiest and quickest to implement. Meanwhile, Offsey (1997) listed several technologies for enabling knowledge management like intranets,

information retrieval engines, electronic publishing systems, groupware, data warehouses and data mining tools. He added that those technologies give benefits in terms of awareness, accessibility, availability and timeliness. Further more, Standing and Benson (2000) have explored the issues about improving knowledge communication through the intranet interface. They concluded that Intranet has made it easier for users to acquire knowledge, submit knowledge and to manage knowledge more effectively. However, there are still much scope for the development of the organizational intranet as a knowledge resource. Junnarkar and Brown (1997) assess that, technological role in terms of mechanisms to facilitate knowledge creation; the information sources organizational decision-makers use and sense-making activities to support innovation become the fundamental issue.

METHODOLOGY

The purpose of this study was to understand how selected Malaysian organizations used the technological infrastructure for knowledge management. This study utilized the survey research method where a sample was chosen based on purposive sampling. This study is considered as an exploratory study since the phenomena studied to be the pioneer in the context of Malaysian organizations. The samples for this study consists of 51 organizations where it was selected from several sectors like manufacturing, retail/wholesale, utilities/telecommunication, financial services, government, state owned, education and construction. Table 1 provides the list of the respondents that represent a few sectors of selected Malaysian organizations. Respondents were selected between the CEO/Managing Director and any people at the upper level in the companies. Those people were chosen because they best understand the perception of knowledge management. The respondents were asked to answer the questions according to the following statement such as implemented in company, not implemented in company and also implemented for knowledge management.

Table 1: List of selected Malaysian organizations

Organizations	Frequency	Percentage
Manufacturing sector	10	19.60%
Services sector	7	13.70%
Universities	13	25.49%
Private colleges	8	15.68%
Government department	7	13.70%
State owned agency	6	11.76%
Total	51	100%

Eight technological infrastructures were chosen as the technological infrastructure for knowledge management as described below. The questionnaire was developed to get information regarding technological infrastructure used in the companies. The result was then analyzed in the form of descriptive statistic. The analysis will only explain the data at hand, which do not represent the actual population of Malaysian organizations.

Internet : an international network of networks that is a collection of hundreds of thousands of private and public networks

Intranet : Is an internet-like network within organization

Document Management System : automates the control of electronic documents through their entire life cycle within organization, from initial creation to final archiving

Groupware : is a software that enable communication among people within organization

Data warehousing/mining : is a centralized repository of selected corporate data to support decision making

Decision support system : a system utilizes decision models, database, and decision maker's own sight to help them make a decision

Extranet : a network that link business partners and have access to each other

Unified Messaging System : a system that filter/condense and amalgamate incoming messages

FINDING AND DISCUSSION

This section presents the results of data analysis for this study. The results were presented below to indicate the technological infrastructure used for knowledge management.

Chart 1: Internet

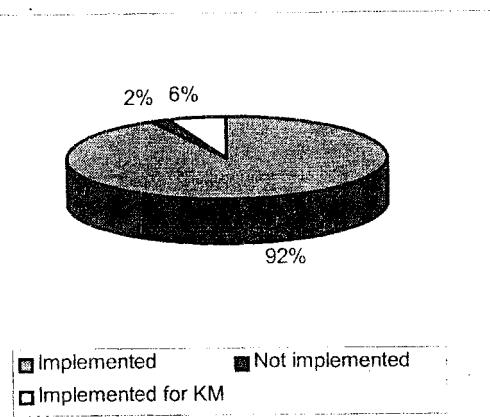
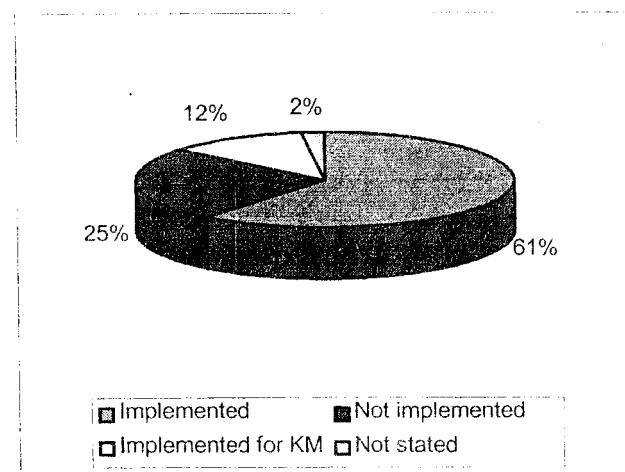


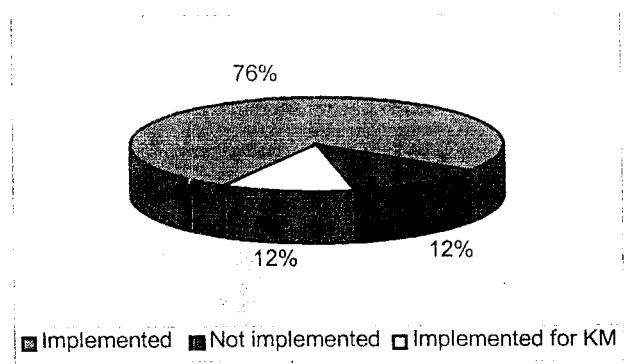
Chart 1 shows that 92 % of the companies have implemented Internet in their companies and 2% still have not implemented. Surprisingly, only 6% implemented it for knowledge management.

Chart 2: Intranet



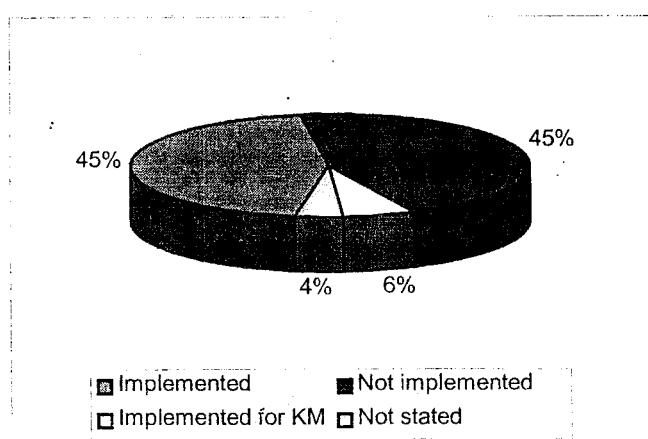
As for intranet, 61% have implemented, while 25% have not implement. The percentage for implementing Intranet for knowledge management was also discouraging. It is only 12%.

Chart 3: Document management systems



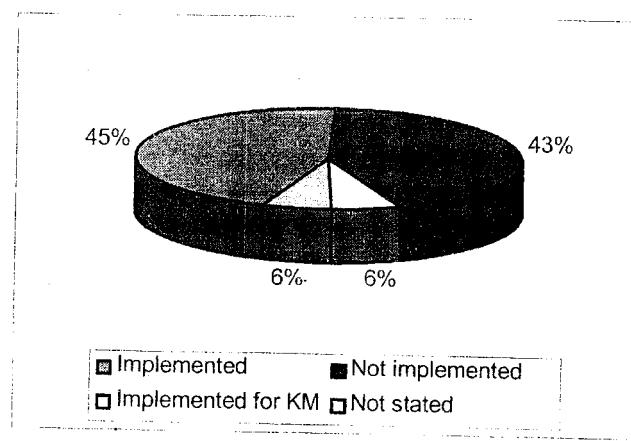
Most of the companies have implemented document management systems. Chart 3 shows that 76% of them have implemented it, 12% have not implemented and another 12% have implemented DMS for knowledge management.

Chart 4: Groupware



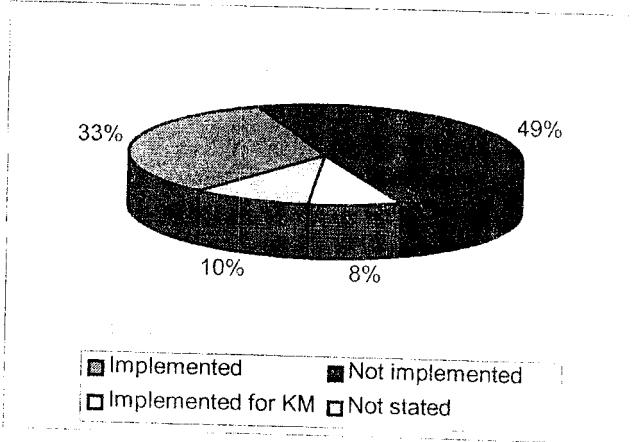
The result for groupware in chart 4 shows the equal percentage between companies that have implemented it and those that have not implemented it. It shows that 45% have implemented and 45% have not implemented. For the companies that have implemented groupware, 6% have implemented it for knowledge management.

Chart 5: Decision support system



Another technological infrastructure that have been used in companies is decision support system (DSS). The research shows that 45% have implemented DSS in their companies, while 43% still not implemented it. 6% have implemented DSS for knowledge management.

Chart 6: Extranet



Besides Internet and Intranet, Extranet is also being used as a technological infrastructure for knowledge management. However, only 33% have implemented extranet in their companies, while 49% have not implemented it. Only 8% implemented it for knowledge management.

Chart 7: Unifying messaging systems

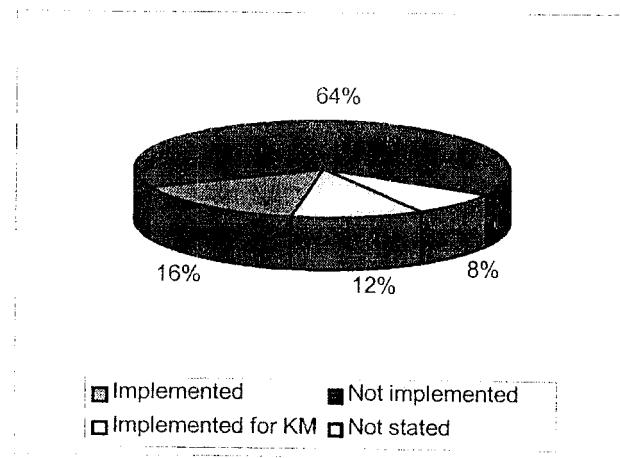
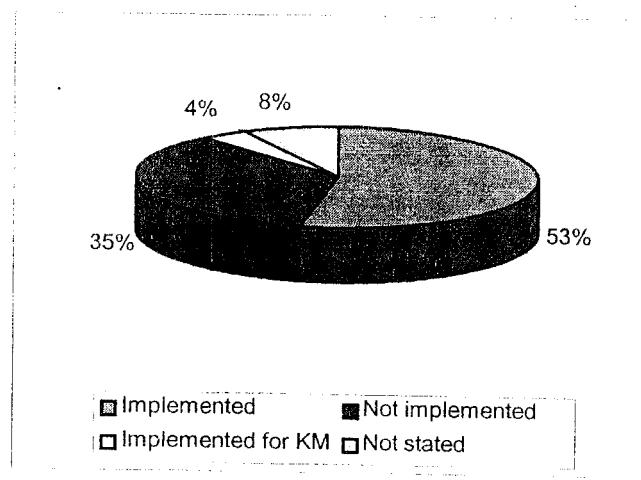


Chart 7 shows the result for implementing unifying messaging system in companies. Most of the companies have not implemented it (64%). Only 16% implemented it in their companies and 8% have implemented it for knowledge management.

Chart 8: Data warehousing/mining



The final chart shows the result for data warehousing/mining. It shows that 53% have implemented it in their companies, while 35% have not implemented it. From that, 8% have implemented data warehousing/mining for knowledge management.

Figure1: Summarized technological infrastructures that have been implemented

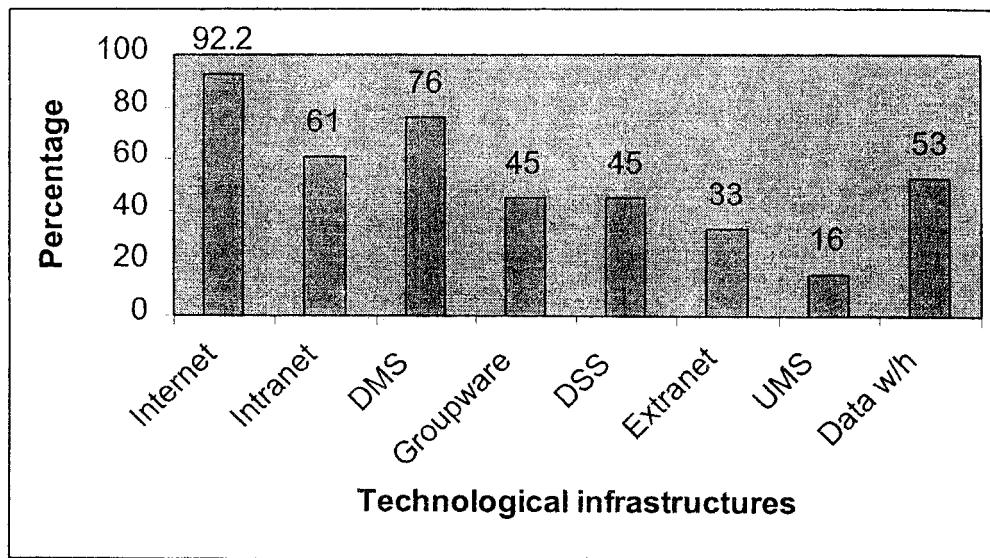
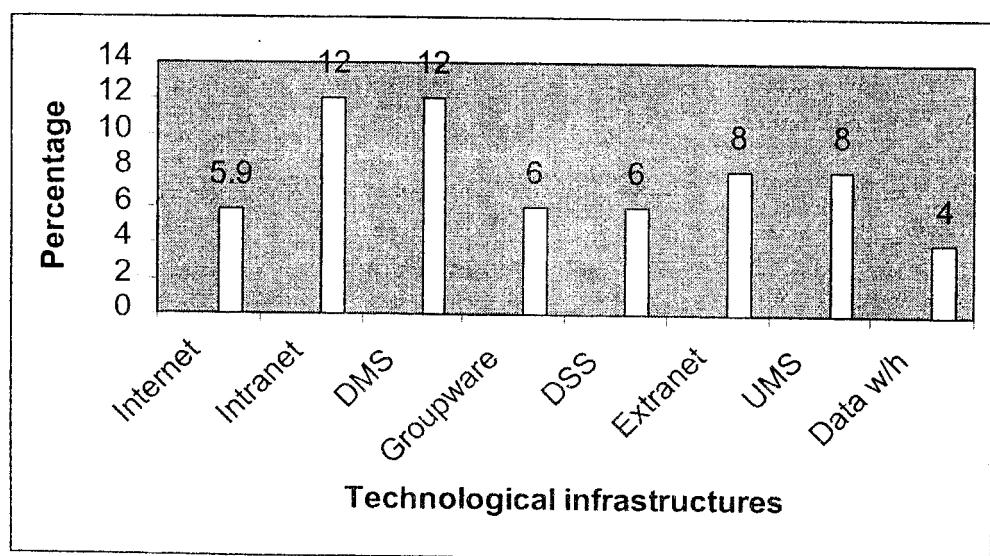


Figure 1 summarizes the result for the companies, which have implemented the technological infrastructures/tools in their organizations. It shows that Internet is the most used tool (92.2 %), followed by document management systems (76 %), intranet (61 %) and data warehousing/mining (53 %). The others like Groupware, Decision Support System and Unifying Management System shows small percentage in term of their usage.

Figure 2: Summarized technological infrastructures that have been implemented for knowledge management



Although the percentage for companies which had implemented technological tools is quite encouraging, however, it was not for knowledge management. Figure 2 summarized technological infrastructures that have been implemented for knowledge management. It shows that only 12 % of the organizations implement Intranet and DMS for knowledge management, 8 % for Extranet and UMS and 6 % for groupware and DSS. Another surprising finding is that even though 92 % have implemented Internet in their companies, but only 5.9 % implement it for knowledge management.

CONCLUSIONS

The results of this study have provided some insight regarding the usage of technological infrastructure for knowledge management. It can be concluded that most of the companies have the technological infrastructure in their organization, however, they do not realize on the importance of the usage of those technology infrastructure for knowledge management purposes. In addition, most of the companies do not even utilize the technology infrastructure that they have. Therefore, it is recommended that the organizations should to increase the knowledge management effort by sending employees for training on the usage of technology. By doing so, it is hopefully everyone knows where to find the organization's knowledge, and thus saving time and effort. Technology also permits people to easily share ideas, work together, brainstorm and collaborate. People just need to be educated about the technology that is available and how to use it.

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