Mixing Qualitative and Quantitative Methods in Formulating KMSS within the Context of Malaysian PIHE.

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Abstract

The purpose of this article is to demonstrate how quantitative and qualitative methods collaborate and apply in formulating KMS strategy within the context of Malaysian PIHE. The latter is used to explore and identify special interest case study sites, while the former will be done to understand the process and context of real situation. Throughout the analysis the multiple perspectives theory by Mitroff and Linstone (1993) will be employed to represent the essential perspectives that need to take into consideration in formulating KMS strategy. This study emphasised on the holistic way of formulating KMS strategy by combining both technical and non-technical issues involving in an organization. This article elucidates the process of (a) how do both quantitative and qualitative methods involve? (b) how do the data is going to be analyze? And (c) what are the expected output of the methods?. The processes reflect upon the objective to answer the two main research questions; (a) How to formulate a more holistic strategy using multiple perspectives theory for KMS implementation in Malaysia PIHE context ? and (b) What factors conspire to influence the formulation of KMS strategy?

Keywords: Multiple perspectives, literature review, survey, case study

1.0   Introduction

The main purpose of knowledge management is to exploit organizational knowledge for competitive advantage through the support of technology. In tandem with rapid technology advancements, the concept of knowledge management in the late 1990s and early 2000s has advanced into various research areas and business communities. The main focus of this effort is exploiting what is called 'knowledge', both tacit and explicit in stable, complex and chaotic environment. However, there is a paucity of study concerning KMS implementation in IHE context, although knowledge management practice is a norm in the academic community. This study discusses a holistic model in formulating KMS strategy for the context of IHE. For the purpose of this study, KMS strategy is defined as how information systems strategy supports KM initiatives within an organization to achieve its goals. This paper classifies KMS strategy according to multiple perspectives theory. Rather than focusing either a social science and management, or computer and engineering dimension, this study blends both soft issues and hard issues in formulating KMS strategy. This enables the development of a strong KM foundation to support

individual, team and organization in establishing an appropriate KM infrastructure, infostructure and organizational culture.

The elements of Multiple Perspectives Theory was identify from an extensive literature review in various disciplines related to KM concept encompassing computer science, information technology, social science, business and sociology. The multiple perspectives theory provides a holistic view in solving real world problem. The three generic elements are Technical (T), Organizational (O) and Personal (P). The multiple perspectives model for formulating KMS strategy will be developed to highlight the ill-structured problem of social issues in various contexts in interacting with technology. This model will has a potential in assisting IHE in implementing KMS initiatives by introducing a more holistic approach. This paper demonstrates a finding of empirical study of 17 Public IHE in Malaysia by adopting the concept of Multiple Perspectives Theory in developing KMS strategy. The result shows the degree of adopting each of elements in the Multiple Perspective Theory that based on 5-likert measurement range from 'strongly agree' to 'strongly disagree'. This paper argues that the multiples

perspectives theory has the essential elements to include in formulating KMS strategy.

2.0 Methodology

For the purpose of this study, both quantitative and qualitative methods will be adopted from tranqulation data evidence to support the journey of research design in answering research problems. The research design consists of three phases (a) literature review, (b) survey and (c) case study.

2.1 Literature

The initial phase of this study is reviewing literature form various evidence from books, journals, magazine articles, conference papers and proceeding. A synthesizing data of myriad KM literature from a variety of discipline from psychology to computer science provides a foundation for gaining insight multiple perspectives theory incorporate in formulating KMS strategy, particularly in PIHE context. Additionally, the intended of literature review provide a strong underpinning to understand the multi facets of knowledge, knowledge management and knowledge management systems concept and the problem areas. Drawing from literature collection, data analysis is done based on content analysis technique of specific themes are identified to fit with the multiple perspectives theory. The multiple perspectives theory provides a holistic view in solving real world problem. The three generic elements are Technical (T), Organizational (O) and Personal (P).

2.1.1 Technical Perspective

The technical (T) perspective on knowledge management refers to technologies that are used to ensure successful of KMS implementation. The need for the appropriate knowledge management technologies has been discussed recently in terms of exploitation the information technology role in supporting and enhancing knowledge management process. Therefore, technologies become instruments to facilitate the knowledge managing process involving transformation of different types of knowledge (Marwick, 2001). Lewkowicz and Zackland (1999) illustrate this idea by describing information technology as tools to help people work together more effectively. Thus, the T perspective focuses on IT and systems application components for supporting organizational effectively in achieving business objectives.

The T perspective is related to the technology tools to support the four generic KM processes in an organization, as depicted in Table 2. However, it is not necessary for an organization to invest and employ KMS technology from the whole KM processes to initiate KMS implementation. Therefore, organizational should strategically identify appropriate technology that can be utilized to support particular KM jobs effectively. There is no single best technology solution found to support KM processes, but various kinds of technologies are capable to facilitate KMS implementation. Nonaka and Takeuchi (1995) propose a knowledge creation model encompassing four different modes, consisting of socialization, externalization, combination and internalization.

a) Socialization

The socialization mode demonstrates the social interaction process to create new tacit knowledge from people-to-people interaction, rather than explicit documentation. In the higher education community, these activities comprise conducting e-meeting for discussion in disperse location areas including researchers use ICT tools and applications to share and exchange idea in virtual environment.

b) Externalization

The externalization illustrates the transformation of tacit knowledge into codified forms. The externalization mode focuses on the process of transforming explicit knowledge into tacit knowledge from people-to-document interaction. In this process, ICT tools and applications play an essential role to assist unstructured and dependent form of tacit knowledge from knowledge provider to be transformed into meaningful digitalized form. For the context of higher education community, ICT tools and applications can be used to assist various functional departments/units to publish their information and idea for other references. For example, experts can use ICT tools and application to establish online forum and discussion. In addition, the university should also provide knowledge repository to support various types of data representation.

c) Internalization

The internalization mode focuses on the process of transforming explicit knowledge into tacit knowledge from document-to-people interaction. The content presentation of codified knowledge is essential to represent intentional and meaningful knowledge. In the higher education context, faculty community can employ ICT tools and application to assist learning and teaching environment. In addition, with the appropriate ICT tools and application faculty conduct online education for external classroom teaching and learning environment.

d) Combination

Finally, the combination approach is concerned with the transformation of explicit knowledge into more meaningful and systematic form (Alavi & Leidner, 1999). This approach is similar to document-to-document interaction. This process is involving transforming existing and current explicit data into digitalized form. Data can be gathered form a variety of resources including business reports, statistical analysis, manual and etc. In addition this information can be manipulated and exploit to generate business report to assist management and business activities.

2.1.2 Organizational Perspective

Organization creates value through three consequent processes involving input, conversion process and output process, which one influenced by organizational environment. In the case of initiating KMS, organizational (O) perspective of KM research is discussed mainly on the strategy elements that have to be addressed by an organization to ensure the success of KMS initiation. Business sectors have begun to recognize the potential use of KM to support new organizational processes. As a result, an increasing number of organizations pay attention to the creation value through leveraging knowledge. Therefore, organizations start to recognize knowledge as one of the important elements of competitive advantage that need to be utilized efficiently and effectively. Therefore, organizational perspective needs to focus on four strategic elements that have to be addressed in initiating KMS: Culture, Structure, Human Resource Learning & Development, Task and Policy

a) Structure

Organizational structure refers to designate authority, coordination mechanism and functional relationship across organization. Liebowitz (1999) argues that an organization should assign specific roles and responsibilities to handle the overall KM initiative in the organization. An increasing number of studies indicate the requirement for an organization to assign chief knowledge officer or equivalent throughout KM implementation process. Davenport and Prusak (1998) identify four related roles to coordinate and direct KM projects namely, knowledge-oriented personnel, knowledge management specialist, knowledge project manager and chief knowledge officer. Even though the label to the functional job is varies, they have a common objective, to provide continuous managing organizational knowledge, educating, motivating and coordinating KM implementation (Beckman, 1999). For example, university has design a specific role ad

responsibility to particular person to handle various facet of KMS implementation such as Chief Knowledge Officer and information expert or any equivalent position. In addition, university also provided particular department or center to run and monitor KMS implementation to support the whole organization needs.

b) Culture

According to Jones (1998), the conversional organizational theory views organization design as a 'process by which managers select and manage various dimensions and components of organizational structure and culture so that an organization can control the activities necessary to achieve its goals.'. A number of researchers argue that that the success of KM implementation require more than well-crafted technology infrastructure with intelligent IT product. Instead, a supportive organizational design needs to be created to promote culture that encourages knowledge sharing across the organization. The process of initiating KMS may affect the way organization work, the organization value systems and the managing style which related to the routine activities among employee members (Abell & Oxbrous, 1999). For the purpose of this study, universities should have conducive culture to support the entire KMS implementation. For example, encourage employees to excessively use ICT tools and applications to share their knowledge, store their knowledge into digitalized form and create social network through communities of practice.

c) Human Resource and Development

Human resource learning and development concern on the skills of individual to the KMS implementation. These skills vary and depend on the particular role of the individuals involve in the KMS. Organization should support and provide the right skill to the right people so they can support KMS implementation. For example, in the case of implementing teaching and learning mechanism in KMS for faculty to deliver their lecture, faculty should make sure that each of the lecturers known how to use the teaching tools in an electronic environment. In addition, they lecturers also need to teach how electronic media can enrich the teaching material in exploiting the interactive medium such as simulations, animations and video clips.

d) Task

There are several factors about issues of task management in the o perspective of KMS. The first is to identify the potential knowledge that can give precious value and outcome to the organization. However this attempt is turned to be one of the crucial problems in KM implementation (Hankey & Dawson,

2000). Practically, an organization is overloaded with various types of information which exist explicitly in terms of documents and reports, or reside in various resources including the human brain and business activities. To make this matter more problematic, this knowledge is somehow scattered across organizations. For example, we can find student records under several different places within an IHE, such as in department of student affair, financial, and accommodation as well as in faculties. Thus, organizations should have certain mechanisms to govern this knowledge in order to make it available and accessible for others to use and reuse, to filter what is important and related to be used, and to identify the best process and technique to ensure that organizational knowledge can be used effectively, and to enhance performance and gain competitive advantage.

e) Policy

The challenging factor in KMS initiative is to remove the sharing barrier among individuals, groups and functional levels. The focus of KMS concept is about to make individual knowledge available and accessible across organizations. Organizations require profound culture to support to change employee attitude and behavior so that they will contribute and participate in the knowledge sharing activity consistently. This is one practical mechanism to ensure the flow of knowledge can be disseminated to the broad organization. Earls (2001) concur that the effective way to transfer tacit knowledge is through social interaction. In formulating KMS strategy higher education can formalized role to encourage employees sharing their knowledge by giving initiative in terms of promotion, money and recognition. In addition, university should also have curtain roles to formalized mechanism to shore current and existing data constantly.

2.1.3 Personal Perspective

The P perspective is identified from Checkland and Schole (1999)'s social factors that consist of roles, norms and values. These elements are interrelated to each other and cannot be segmented that involve in social and culture analysis issues. In order to ensure the success of KMS implementation, the personal perspective needs to identify each of individual's roles that will contribute and support KMS. The main focus to the identification role is to set what are the responsibilities of the respective individuals.

a) Roles

The role of leadership is important to set the responsible and direction of KM objectives to achieve (Rollo, 2002). A leader is a person responsible to set the strategy, policies and roles for employees, to guide them in successful KM implementation. However, without sufficient support from the leader in budgeting, coordination and monitoring, the KM will not to reach the expectation (Bonaventura, 1999). The function of leadership is crucial to successful KM implementation, since the overall direction of KM relies on the excellent direction of leadership to make it realization (Sharp, 2003). Leadership role seems to be a significant aspect to motivate knowledge sharing culture within the organization. A leader needs to provide various kinds of motivation such as extensive and intensive promotion of knowledge sharing (Osterloh & Frey, 2000; Swap et al, 2001).

b) Norms

Norms refer to expected behaviour of individual which reflect to employees routine activities (Checkland, 1999). In an organization, norms influence social behaviour. Norms are emphasizing on how individual will act accordingly to their behaviour. It would be advantage if each employee members of the organization willing to share and disseminate their knowledge across organization. For example, sharing attitude among employee members is an essential issue to address when discussing P perspective of initiating KM. The P perspective in sharing attitude refers to the willingness to share individual knowledge supported by KMS infrastructure and technologies. A great number of researchers identify sharing attitude as challenging barriers to disseminate individual knowledge across organization. Other example is The NIHS refers to reluctance to accept an external idea because it is not internally developed. Therefore, individuals reject other ideas because internal solutions would be superior. Organizational might codified lessons learned from experience and electronically create social network to promote knowledge sharing, but the NIHS inhabit the attempt to reused the knowledge and accept other ideas.
(Checkland, 1999).

c) Values

In the personal Checkland (1999) refers values as an 'actual performance in a role will be judged according to local standard'. How organizational policies and rules can influence the contribution from employee in KMS implementation. For example, university should provide initiatives in terms of recognition and money for each of the contribution by employee members.

2.2 Survey

The intended outcome of the data analysis from literature review was pre-defined themes of each MP theory that to be use as a guide in developing survey

questions. By starting with a clearly themes in each perspective, this allow researcher to develop a comprehensive understanding of how multiple perspectives theory contribute in formulating KMS strategy. In this study, it was necessary to survey the current status of KMS strategy in all Malaysian PIHE since the outcome of this survey will be used to identify the sample case sites.

a) Study Population

Thus, a mail questionnaire-survey was designed based on themes that represent each element in multiple perspectives theory in order to assess the current status of KMS strategy in Malaysia PIHE. The personal demographic variables in this study are technical/non-technical professional, professional position, administrative position, and institution's age. The target participants in this study were technical professional (IT Directors, Head of IT Departments and IT Managers) and non-technical professional (Various Directors and Deans). These individuals were targeted because (a) they are in the potential position in influencing the process of formulating KMS strategy in their institutions. The study's sample is the total population of PIHE in Malaysia (n=17). A pilot test was conducted to ten respondents at one of Malaysia PIHE. A total of 425 (17 institutions x 25 respondents per institutions) surveys were mailed to vice chancellor of each institution and he will choose and distribute the questionnaire to the respective respondents. The response rate is 32.48%. This study focuses on the organizational level of unit analysis. Therefore each respondent was required to answer the questionnaire as a representative of the whole organizational function.

b) Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 11.0). The variables in this study included (a) Technical Perspective (Socialization, Externalization, Internalization, Combination), (b) Organizational Perspective (Structure, Culture, Human Resource & Development, Task, Policy) and (c) Personal Perspective (Roles, Norms, Values). An analysis for mean was performed to examine differences pattern of MP theory in formulating KMS strategy among different PIHE. The mean of each MP theory is analyzed based on the degree of agreement of related variables involve in their current KMS strategy. Pattern analysis graph was produce to show the current status of adopting KMS strategy.

The statistical analysis from the survey was designed to provide quantitative assessments of MP theory being employed in formulating KMS strategy in Malaysia PIHE. As mentioned earlier, there is no pre-determine hypotheses but the hypotheses will emerge along the research process. This survey has two folds. Firstly, the survey was designed choose four PIHE that have overall highest mean in technical perspective, organizational perspective and personal perspective. These four sample PIHE will be selected to represent case study sites for Malaysia PIHE. As seen in figure, the finding indicates that two of the PIHE was established before 1990 and the other pair of institutions was established after 1990.In addition, the pattern analysis from the survey is used to create category for sample case sites into new PIHE and Old PIHE. Secondly, the assumption of the statistical analysis from new PIHE and old PIHE show that new PIHE emphasis more on technical perspective and personal perspective than old PIHE in formulating their KMS strategy. Thus, these finding will be used as a direction to guide researcher in conducting case studies.

2.3 Case Study

The second phase of this study is conducting a multiple case studies. As mentioned earlier, the selection of case study sites are derived from the statistically analysis from survey outcomes. The main objective of the case study is to obtain qualitative measurement from the real situation. Interview will be conduced to both technical professional and non-technical professional who are the informant in formulating KMS strategy. These people are IT directors, IT managers, deans and others directors. For the purpose of this study, the population of the case studies are selected based on appropriate populations that divided into two pairs which one pair of new PIHE and another pair of old PIHE.

2.3.1 Data Analysis

The data analysis from the case study will derive from cross-case patterns.. The unique patterns within-case and cross-site can be analyzed by developing categories of each pairs of the case study site. Furthermore, these cases within the same category will shows the pattern based on the similarities from within-site analysis and differences from cross-site tactics between each pairs. Consequently, the result of the multiple case studies can be used to develop hypothesis or create new concepts that does not anticipate in the earlier research design. This data analysis provides essential foundation to develop generation of insight. In addition, literature review will be used to support and provides clear evidence to the new research finding from the whole study. Even though the initial research design seems that the process can be done iteratively, but the final finding in answering the research question will be obtain from overlap data analysis in data resources from various evidence.

3.0 Conclusion

In conclusion, the multiple perspectives theory has been used to create a foundation for holistic way to formulate KMS strategy by combining both technical and non-technical issue. Knowledge management literature from diverse disciplines has clearly point out the important of each element in multiple perspectives theory in influencing KMS strategy. In addition, the combination of quantitative method and qualitative method are necessary to get a triangulation research evidence to support research finding. Based on this research method presented in this paper, quantitative method is used for exploratory study in order to find the current status of KMS strategy in Malaysian PIHE and to identify the sample case sites. On the other hand, multiple-case studies approach will be contributed to qualitative evidence to explore the elements in multiple perspectives theory and provides generation of insight.

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