THE INFLUENCE OF APPROPRIATION OF KNOWLEDGE MANAGEMENT SYSTEM AND INTRINSIC MOTIVATION ON SOCIAL CAPITAL IN HIGHER EDUCATION INSTITUTIONS

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ABSTRACT

As knowledge organization, Higher Education Institutions (HEI) are among the critical players in ensuring the knowledge being managed strategically in order to ensure the optimum benefits of knowledge creation, transfer and sharing happens among the internal and external community. These days, it was estimated that more than 80 percent of Knowledge Management (KM) programs end up with very low significant impact on the adopting organizations. Based on the existing studies, there are significant role of Appropriateness of KMS (A-KMS), Intrinsic Motivation (IM) and Social Capital (SC) in ensuring the KMS success. Thus, the purpose of this study was to empirically and systematically investigate the possible relationship between Appropriateness of KMS (A-KMS), Intrinsic Motivation (IM), Social Capital (SC) and demographic background in order to recommend the KMS Success Model. There were two phases of study using quantitative approach. The first phase was the survey approach where 1200 workers from Malaysian HEIs were invited to participate in the survey and 398 (33%) was responded. Subsequently, the second phase was the semi-structured interview where nine (9) senior managers from HEI were selected for detail interview. In quantitative study, a single mean t-test was conducted to identify whether the implementation level of A-KMS, IM and SC are significantly high. Furthermore, One-way ANOVA and independent sample t-tests were conducted to identify which demographic variables have influence on the SC. Subsequently a correlation and multiple regression analyses were conducted to identify the correlation and model that best represent the interrelation between A-KMS, IM, SC and demographic variables. A positive correlation was found between A-KMS and SC as well as IM and SC. As for multiple regression, the best model comprises of selected variables from A-KMS and IM was derived. The semi-structured interview was also conducted to complement and expand the findings from survey. Significant patterns and themes were identified and the findings suggest that the internal and external factors as well as barriers are the contextual factors that affect the implementation of A-KMS and IM to support the development of social capital. Finally, the Conceptual Framework of a A-KMS-IM-SC relationship was recommended accordingly.

ABSTRAK

Sebagai sebuah organisasi pengetahuan, Institusi Pengajian Tinggi (IPT) memainkan peranan yang penting dalam memastikan pengetahuan diuruskan secara strategik bagi memastikan manfaat optimum daripada penciptaan, pemindahan dan perkongsian pengetahuan yang berlaku di kalangan masyarakat dalaman dan luaran. Hari ini, ia dianggarkan bahawa lebih daripada 80 peratus daripada program KM berakhir dengan impak yang sangat rendah yang ketara ke atas organisasi yang cuba melaksanakannya. Berdasarkan kajian yang sedia ada, terdapat peranan penting Kesesuaian KMS (A-KMS), Motivasi Intrinsik (IM) dan Modal Social (SC) dalam memastikan kejayaan KMS. Oleh itu, tujuan kajian ini adalah untuk mengkaji secara empirikal dan sistematik hubungan antara Kesesuaian KMS (A-KMS), Motivasi Intrinsik (IM), Modal Sosial (SC) dan latar belakang demografi untuk mencadangkan Model Kejayaan KMS. Terdapat dua fasa kaji selidik yang menggunakan pendekatan kuantitatif. Fasa pertama adalah pendekatan kuantitatif di mana 1200 pekerja dari HEIs Malaysia telah dijemput untuk mengambil bahagian dalam kajiselidik dan 398 (33%) memberikan maklum balas. Selepas itu, fasa kedua adalah pendekatan tembual di mana 9 pengurus kanan dari IPT telah dipilih untuk temubual. Dalam kajian kuantitatif, min ujian-t telah dijalankan untuk mengenal pasti sama ada tahap pelaksanaan A-KMS, IM dan SC adalah cukup tinggi, di mana ANOVA Satu hala dan t sampel bebas-ujian telah dijalankan untuk mengenal pasti pemboleh ubah demografi pengaruh ke atas SC dan seterusnya korelasi dan analisis regresi berganda telah dijalankan untuk mengenal pasti hubung kait dan model yang terbaik mewakili hubungan timbal-balik antara A KMS, IM, SC dan pembolehubah demografi. Hasil kajian menunjukkan terdapat korelasi positif antara A KMS dan SC juga IM dan SC. Seterusnya melalui ujian regresi berbilang, model terbaik terdiri daripada pembolehubah yang dipilih dari A KMS dan IM telah diperolehi. Penyelidikan melalui temubual juga dijalankan untuk mengembangkan penemuan daripada kajian kajiselidik. Corak dan tema penting yang telah dikenal pasti dan penemuan menunjukkan bahawa terdapat faktor-faktor dalaman dan luaran serta halangan adalah faktor konteks yang memberi kesan kepada pelaksanaan A KMS dan IM untuk menyokong pembangunan modal sosial. Akhir sekali, Kerangka Konseptual Model A-KMS-IM-SC telah disyorkan sewajarnya.

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LIST OF ABBREVIATIONS

KM	Knowledge Management
KMS	Knowledge Management System
A-KMS	Appropriation of Knowledge Management System
HEI	Higher Education Institution
PHEI	Public Higher Education Institution
UPM	University Putra Malaysia
CKO	Chief Knowledge Officer
CIO	Chief Information Officer
MAPITA	ICT Director's Council for Malaysian Public HLI
MMU	Multimedia University
USM	University Sains Malaysia
UUM	University Utara Malaysia
APEX	Accelerated Programme for Excellence
UPSI	Universiti Pendidikan Sultan Idris
IIUM	International Islamic University Malaysia
UMP	Universiti Malaysia Pahang
UniMAP	Universiti Malaysia Perlis
UKM	Universiti Kebangsaan Malaysia
IMU	International Medical University
IM	Intrinsic Motivation
IMI	Intrinsic Motivation Inventory
IS	Information System
IT	Information Technology
ICT	Information and Communication Technology
ERP	Enterprise Resource Planning
BSC	Balance Score Card
ISO	International Standards Organization
K Identification	Knowledge Identification
K Acquisition	Knowledge Acquisition
K Creation	Knowledge Creation
K Organization	Knowledge Organization
K Transfer	Knowledge Transfer
K Application	Knowledge Application
K Adoption	Knowledge Adoption
SEF	Social Experience Factory
Mastic	Ministry of Science and Technology and Environment, Malaysia
SC	Social Capital
STS	Socio-technical System
TTF	Task-Technology Fit
TPC	Technology-to- Performance Chain
SETARA	Rating System for Institutions of Higher Learning
MQA	Malaysian Qualifications Agency
CoP	Community of Practice
FAQ	Frequently Asked Question
MBJ	Majlis Bersama Jabatan

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

One of the most significant evolutions in the business environment over the past decade is the dawn of the new economy of knowledge assets as a means of creating value and achieving a competitive edge (Evangelista et al. 2010). In particular, the management of knowledge assets may provide an organization with new tools forsurvival, growth and maintaining a sustainable competitive advantage (Omerzel and Antoncic, 2008).

Particularly in education, Knowledge Management System (KMS) investment was estimated at USD 373 billion dollars in US alone, with higher education accounting for USD 247 billion dollars (Malhotra, 2004). In addition, Malhotra (2004) also reported that the annual corporate and government knowledge acquisition through training in the US alone was projected at over $70 billion dollars. Besides, knowledge asset in Higher Education Institution (HEI) has also been widely managed through various KMS tools such as discussion databases, technical libraries, lessons learned databases, portals of communities of practice and best practices databases (Chua and Wing, 2005). Kidwell et. al (2001) also believed that there is tremendous value to higher education institutions that develop initiatives to share knowledge to achieving learning objectives. Furthermore, a study done by Mohayidin (2007) which regards to the KM implementation in Malaysian Higher Education Institution found that the university staff often develope new ideas or generate new knowledge through discussions with peers and experts, observation and by experimentation, but it is not being captured, managed and organized properly for the benefit of the organization. Overall, theuniversity staff often contribute or disseminate their knowledge through publications,

seminar, conferences, workshops, dialogues, forums, informal discussions, teaching and training, and consultancy.

1.2 PROBLEM STATEMENT

KM has evolved into a reality from what was merely an idea. KM has been embedded in the policy, strategy, and implementation processes of worldwide corporations, governments, and institutions (Malhotra, 2005). In fact, the market for KM business application capabilities such as CRM was expected to grow to $148 billion by 2006 and KM was also expected to save $31 billion in annual re-invention costs at Fortune 500 companies (Malhotra, 2004). It is also found that ninety percent of companies, which deploy Knowledge Management solutions benefit from better decision-making and 81 percent notice increased productivity (Chandran and Raman, 2009).

According to one of the empirical study done in KM, there were more than 60% large enterprises that have already applied or were applying knowledge management in USA, and in Europe and in England, this percentage was as high as 70% (Zhang and Hong, 2009). Additionally, they found out that the benefits obtained after introducing knowledge management are the following: able to help enterprises to make better decisions (71%), acquire a higher degree of customer satisfaction (64%), help enterprises reduce costs (57%) and help businesses increase their profits (52%).

While knowledge management is becoming pervasive in today's organizations, the value of knowledge and knowledge management systems are still two of the biggest concerns for most organizations (Smith and McKeen, 2003b). Beside the above achievement, it is also reported that many KMS project fails due to lack of motivation to seek and share knowledge among the users and requires huge effort during working (Happel, 2009). People usually have low motivation to contribute knowledge to public repositories. The reason is lack of personal benefit and privacy since people do not like to expose their information and expertise to others. In terms of effort, computer-supported knowledge sharing initiatives always require huge effort in creating and maintaining central knowledge repositories especially during the initial

stage. This includes the cost of knowledge capturing, categorization and setting access rights for knowledge.

Furthermore, numerous fail cases of KM project were also reported. Indeed, it was estimated that more than 80 per cent of KM programmes ended up with very low significant impact on the adopting organisations (Lucier and Torsiliera, 1997; Desouza, 2003; Qian and Bock, 2005). Unlike the success stories where the names of the organisations are prominently featured, cases of KMS project failure rarely reveal the actual identities of the organisations involved. Among failure factors identified through various research are the following: ineffective and inefficient KMS (Desouza, 2003), lack of organizational change program (Nick et al. 2006), lack of awareness and understanding of knowledge management, lack of continuous support from top management, influenced by IT-led projects, low trust among staff (Storey and Barnett, 2000), lack of motivation among users and require huge effort (Happel, 2009).

Similarly, in Higher Education Institutions (HEI), beside the high investment on KMS, successful and significant KMS implementation in Higher Learning Institution is still a big doubt and requires huge effort and strategic concept and approach (Woods, 2011). In Multimedia University (MMU), the KMS-Share Net project could not be sustained due to the lack of various sustainable factors. This fact is further supported by a study done by Ismail and Chua (2006) on KMS implementation in University Putra Malaysia (UPM). Despite the establishment of KM unit, the appointment of Chief Knowledge Officer (CKO) and rewarding the system to recognize the staffs' contribution and efforts to support the KMS implementation, the KMS project still could not be sustained.

Thus, due to the high risks of failure in KMS implementation, many HEIs are still waiting for a successful KMS project without aggressively and seriously commit to KMS project (Woods, 2011). However, unfortunately, due to the current pressure of the marketplace and high demand of the modern users in the modern environment, and the use of business techniques such as performance management, human capital management, quality assurance and total quality management that are becoming commonplace in the higher education field, the demand for a more strategic and

effective management of knowledge through KMS becomes higher (Ubon and Kimble, 2002; Woods, 2011). Therefore, just as businesses attempt to improve their efficiency and effectiveness of their operations through KMS to ensure the sustainability of the business in competitive edge, higher educational institutions could use the potential of KMS to enhance the learning of students, research and development, services and administration.

Thus, further empirical investigations need to be done to find sustainable and success factors of KMS implementation.

1.3 RESEARCH QUESTIONS AND THEORIES

1.3.1 Research Questions

The above-mentioned issues related to KMS and its effects on organizations can be operationalized into research questions concerning the user's acceptance and use of KMS (Alavi and Leidner 2001). Alavi and Leidner (2001) stated that the use of KMS will influence the adoption of individual or organizational knowledge management. One of the factors that is impacted from the KMS implementation is social capital (Nahapiet and Ghoshal, 1998). Nahapiet and Ghoshal (1998) defined social capital as relationship networks embedded with the available resources possessed by people or social units. Nahapiet and Ghoshal (1998) suggested that social capital leads to knowledge sharing. Similarly, Lesser (2000) argued that social capital would enhance knowledge sharing within organization. Tsai and Ghoshal (1998) provided empirical evidence for the theoretical propositions made by Nahapiet and Ghoshal (1998). Social capital emphasises the trust-based relationships between people, and the networks and communities through which they create and share knowledge by engaging in collaborative and cooperative action (Cohen and Prusak 2001). Social capital is thus the most valuable asset possessed by organizations (Lesser 2000). Instead of examining the direct impact of KMS on knowledge management processes (eg. knowledge creation, transfer and sharing), this research investigates the effects of KMS on individual social capital because social capital is a rich indicator of crucial organizational social resources (Yli-Renko and Autio 2001).

Furthermore, despite the availability of the best technology and access to the rich knowledge base, the knowledge workers' motivation and commitment also determine the success or failure of knowledge management system (Dyer and McDonough, 2001). Workers' motivation and commitment play an important role in enabling sharing of tacit and explicit knowledge (Stenmark and Lindgren, 2008; Toumi, 2001). Researchers have observed that unsuccessful KM project struggled to get the organization's members to contribute to repositories and the commitment to use knowledge from the repository (Malhotra, 2003). In Self-Determination Theory (Deci et al. 1994), there are different types of motivation based on the different reasons or goals that give rise to an action. The most basic distinction is between Intrinsic Motivation, which refers to doing something because it is inherently interesting or enjoyable, and Extrinsic Motivation, which refers to doing something because it leads to a separable outcome. Intrinsic Motivation motivates self-determined behaviour, which is performed out of interest and to satisfy the innate psychological needs for competence. Extrinsically motivated behaviours are those that are executed because they are instrumental to some separable consequence and they can vary in the extent to which they represent self-determination (Ryan and Deci, 2000). Lucas (2010) further highlighted the effect of intrinsic motivation in encouraging learning activities. Furthermore, Woods (2011) stressed that extrinsic motivation which is always being associated with KM hard approach cannot sustain the KMS usage, hence requires the intrinsic motivation through KM soft approach. Thus, in this study, the influence of KMS together with intrinsic motivation (IM) on individual social capital will be investigated.

There are two problems addressed in this study. First, the study is concerned with the acceptance and use of KMS and the impacts of KMS use on end-users' (i.e., knowledge workers) social capital. Second, the study is also concerned with the motivation of the knowledge workers which relates to KMS use and individual's social capital.

Thus, in the context of this study, the following questions can be derived to address the above problems:

1. What are the fundamental determinants to workers' acceptance and use of KMS in HEIs?

2. What are the fundamental determinants to intrinsic motivation in HEIs?
3. What are the fundamental determinants to Social Capital in HEIs?
4. What are the impacts of KMS use and Intrinsic Motivation on the workers' (i.e., knowledge worker's) social capital in HEIs?
5. How do HEIs improve the KMS acceptance and usage, and motivate their workers in order to give impact to social capital?

1.3.1 Theories

In the following section, a brief description of the development of theory and research models is presented. The details of the development of theory, research models, and hypotheses are presented in Chapter 3.

In the knowledge-based theories, an organization is treated as a distributed knowledge system (e.g., Grant 1996; Tsoukas 1996; Sveiby 2001), and/or knowledge-based activity system (e.g., Spender 1996; Spender 1996; Nonaka and Toyama 2000) in which individuals, tasks, technology (KMS), organizational structures and procedures are interrelated with each other. As such, KMS should be investigated from an integrated perspective. Furthermore, organizational knowledge is socially constructed, emerging, and dynamic in nature (Tsoukas 2000; Brown and Duguid 2001). Accordingly, a dynamic and evolutionary perspective is essential for interpreting KMS in organizations. Spender (1996) suggested that socio-technical systems theory (Fox 1995; Coakes 2002) and structuration theory (Spender 1996; Orlikowski 2000) may be required to examine knowledge management (including KMS) from a systematic, dynamic, and longitudinal perspective. While socio-technical systems theory provide a systematic framework to represent the main system components (e.g., KMS, people, tasks, organizational structures, and environment) and the interrelations between these components (Coakes 2003), structuration theory or adaptive structuration theory (AST) describes the evolution and dynamics of the socio-technical system from a longitudinal perspective (DeSanctis and Poole 1994; Orlikowski 2000). As a result, two KMS research models have been developed: a socio-technical system model of KMS and an AST-based KMS success model. The socio-technical model of KMS was developed for modelling KMS in organizations based on the five components of socio-technical model

proposed by Coakes (2002). The socio-technical model sets out the main KMS components, namely:

- The technical components.
- Knowledge workers as end-users and as individual knowledge resources.
- Tasks performed by knowledge workers.
- Networks as channels for knowledge sharing, and
- Organizational environment and interrelations (see Chapter 3 for more details).

The AST-based KMS success model represents dynamic and evolutionary KMS in organizations, based on the adaptive structuration theory suggested by DeSanctis and Poole (1994). The AST-based KMS success model focuses on the appropriation of KMS, and includes the determinants to a user's appropriation of KMS and the impacts of KMS appropriation on an individual's social capital. The AST-based KMS success model represents the socio-technical model of KMS in a longitudinal way, and reflects a system-to-value chain of KMS. Following the suggestions by Alavi and Leidner (2001), the major determinants to user acceptance and use of KMS come from a review of the IS success models which include:

- The DeLone and McLean IS success model (DeLone and McLean 1992; DeLone and McLean 2003).
- The Technology Acceptance Model (TAM) (Davis 1986; Davis 1989).
- The Task-Technology-Fit (TTF) model (Goodhue and Thompson 1995), and
- The System-to-Value chain (Doll and Torkzadeh 1991).

As a result, information quality (DeLone and McLean 2003), task-technology fit (Goodhue and Thompson 1995), perceived usefulness (Davis 1989), perceived ease of use (Davis 1989), and social norms (Lucas and Spitler 1999) are chosen as determinants of user acceptance and use of KMS. Performance-related use (Doll and Torkzadeh 1991; Doll and Torkzadeh 1998) is designed as a multidimensional construct for representing the richness of the use of KMS in organizations (DeLone and McLean 2003). Given that knowledge-sharing in organizations is mainly through communities (Mertins and Heisig 2003; Nielsen and Ciabuschi 2003), KMS usage is oriented to support the learning processes in communities, i.e., a process of" *negotiation of meaning*" by participation and reification (Wenger 1998; Wenger and McDermott

2002). As a result, the performance-related use of KMS is operationalized into two sub-constructs: interaction-related use of KMS and information-related use of KMS.

Apart from user acceptance and use of KMS, the second research question addresses the elements of worker's intrinsic motivation in organization. This study uses the definition of IM introduced by Ryan (1985) which then established as Intrinsic Motivation Inventory (IMI) (Ryan, 1982; Ryan et al. 1983; Plant & Ryan, 1985; Ryan et al. 1990; Ryan et al. 1991; Deci et al. 1994; Aaron, 2009; Leng et al. 2010). Based on IMI, intrinsic motivation can be operationalized into six sub-constructs; instrument assesses participants' interest/enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension.

Finally, the third research question addresses the effect of KMS use and IM on the workers' social capital. This research uses Nahapiet and Ghoshal (1998)'s definition of social capital which is operationalized into three sub-constructs: personal networks, trust level, and shared vision (Tsai and Ghoshal 1998).

1.45 SIGNIFICANCE OF THE STUDY

The outcomes of the research are expected to make several contributions to the policy makers, body of knowledge in knowledge management domain and bring benefits to the public. The contributions can be summarized as follows:

1.45.1 The KMS success model that has been developed can help the policy makers in planning and implementing KMS in their organizations successfully. With the proposed KMS success model, more effective and practical KMS can be developed and implemented.

1.45.2 The KMS Success Model introduced in this study shall contribute in the research of knowledge management as one of the strategies to ensure continuous performance improvement in organization. The model also highlights the organizational elements and measurements which have to be considered in KM project.

1.4.3 The KMS implementation through KMS success model can facilitate people in organizations or public to be a knowledgeable person where the culture of knowledge creation, dissemination, sharing and usage is implemented in day to day life.

1.4.4 The KMS success model introduced in this study shall facilitate organizations to improve their social capital, since through effective use of KMS, trust among the staff can be developed, thus creating team spirit, motivation, commitment and an integrated organization.

1.5 OPERATIONAL DEFINITION

a) **Knowledge** is defined by Davenport and Prusak (1998) as the following: *"A fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information" (p.5)*

b) **Knowledge management** is defined as systematic and explicit ways to build knowledge infrastructures, e.g., KMS, social networks, procedures, culture, and policies, to enable and enhance knowledge creation and sharing by providing time, space, and tools for interaction and collaboration (Davenport and Prusak 1998; Wenger and McDermott 2002).

c) **A knowledge management system** is defined as a technology system implemented and used to integrate organizational knowledge resource in order to help people in organizations efficiently and effectively to obtain the knowledge they need to perform their tasks.

d) **Knowledge workers** are professionals, technicians and management staff who have high levels of formal education, are more empowered and able to use his/her intellective and social skills in more autonomous and creative ways, and whose work is the production and reproduction of information and knowledge (Schultze 2003).

e) **Social capital** is defined by Nahapiet and Ghoshal (1998) as the following: *"The sum of the actual and potential resources embedded within, available through, and derived from the network of relationship possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network" (p. 243).*

f) **Structuration Theory** is defined by Orlikowski (1992) as a framework to embrace both objective and subjective conceptions of information systems in organizations, which has been used to study the organizational adoption of information technologies.

g) **Adaptive Structuration Theory** (AST) is defined by DeSanctis and Poole (1994) as a framework for studying variations in organizational change that occur as advanced information technologies are used. Advanced information technologies trigger adaptive structurational processes which, over time, can lead to changes in the rules and resources that organizations use in social interactions, which, in turn, are the key determinants of social outcomes (e.g., decision outcomes, new social structures and relationships).

h) A **Socio-Technical system** (STS) is defined as a set of principles and systematic methods for organizational design to achieve the joint optimization of the social and technological subsystems of an organization (Ryan and Harrison 2000).

i) **Task-Technology Fit** (TTF) is defined by Goodhue and Thompson (1995) as the following: *"The degree to which a technology assists an individual in performing his or her portfolio of tasks" (p. 216)*

j) **Intrinsic Motivation** is defined by Ryan (1982) as the doing of an activity for its inherent satisfactions rather than for some separable consequence. When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards.

1.6 LIMITATIONS

The primary objective of this research is to investigate the relationship of KMS with some organizational elements. However, the objective of this research is not to prove or disprove theories that have some bearing on KMS. The focus is purely on relevant concept and interrelationship identification:

a) This research does not focus on the philosophical meaning of knowledge and knowledge management model. Rather, it focuses on deriving a mechanism to assist organizations in the implementation of KMS.

b) The focus of this research is not on how and why an organization "knows", or ways of "knowing", but rather on developing a framework that allows one to understand and apply knowledge based on the proposed framework.

c) The target population for the survey in this thesis is restricted to the knowledge workers who are able to, and have the resources to access the Internet. The organizational contexts of the target population are assumed to be knowledge-intensive organizations, as such, the invited participants are staff of educational institutions.

1.7 THESIS ORGANIZATION

This thesis is organized as follows:-

Chapter 2 is devoted to the review of concepts of KMS, intrinsic motivation and social capital development models. The review of literature starts by discussing issues related to KMS, intrinsic motivation and social capital and their integration. Subsequently, several models of KMS, intrinsic motivation and social capital are elaborated.

Chapter 3 discusses the theoretical and conceptual frameworks and research hypotheses for the study as well as providing an overview of the methods for the study and the research design. It commences with a discussion on the quantitative method used for the study. The assessing of survey questionnaire for the quantitative method is introduced.