

A Conceptual Framework of Knowledge Transfer in Malaysia E-Government IT Outsourcing: An Integration with Transactive Memory System (TMS)

Nor Aziati Abdul Hamid¹ and Juhana Salim²

¹ PhD Candidate, Information System Program, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, Malaysia

² Professor, Information Science Program, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, Malaysia

Abstract

Despite extensive research on knowledge transfer issues, there is a dearth of research that has explicitly focused on the role of Transactive Memory System (TMS) in enabling inter-organizational knowledge transfer in e-government IT outsourcing. Although the information systems literature has recently acknowledged the role of TMS in improving knowledge processes, most of the research is still remain in theoretical conjecture. Additionally, most of related research was done in the lab based on the physical, virtual or memory recall tasks. None of empirical work has been done in integrating TMS in outsourcing context since most researchers used interpretive approach. To address this gap, we applied positivist approach through operationalization of identified factors that give impact towards Malaysia Public Agencies outsourcing partnership. The present paper attempts to provide an integrated conceptual framework of knowledge transfer with and integration of TMS to facilitate knowledge transfer process which further can be validated.

Keywords: *Knowledge Management, Knowledge Transfer, Organizational Learning, Transactive Memory System (TMS), Information Technology Outsourcing (ITO).*

1. Introduction

Knowledge Management (KM) has been historically influenced by research undertaken across broad range of disciplines. These disciplines include sociology, psychology and philosophy. Until now, research in KM has been extended through various areas such as strategic management, information system, organizational learning, artificial intelligent and other more. Among those parent disciplines, organizational learning (OL) is the closets 'cousin' to knowledge management (KM). Hackett [1] considered KM and organizational learning as two sides of the coin. Transfer of knowledge is critical to knowledge-intensive project like IT outsourcing. However, the transfer

of knowledge requires continuous organizational learning and the knowledge is being organized to enable knowledge retention capacity for future knowledge utilization. Knowledge is considered as tangible asset to organization. Tangible assets tend to depreciate in value when it is utilized. In contrast, knowledge grows substantially when it is fully utilized and depreciates or stagnant when it is not used. The organization needs to acquire the knowledge, learn, apply and reinvent the knowledge to make it suitable with the organization climate. Indeed, knowledge is of limited value if it is not shared and transferred throughout an organization. Thus, interest has increased in the phenomenon of how the firms create, retain, and transfer knowledge.

In the case of Malaysia, Malaysian Administrative and Modernization Planning Unit (MAMPU) [2] has created a "knowledge bank" structure in the public sector ICT framework to facilitate the sharing of knowledge and experience by capturing information across all Government agencies. This framework will create a structured and systematic transfer and utilization of knowledge generated. For the initial stage, several set of databases has been identified by MAMPU such as economic intelligence, security intelligence, R&D and Government statistics to create the knowledge bank. This initial project is implemented at four ministries; Finance, Health, Works and Education Thus, each ministry must develop their own knowledge bank with back end architecture that can integrate with other stated ministries. This project was initiated to address a high number of complaints regarding public services. There are many factors contribute to poor service delivery in the public sectors and one of them is low level of information and knowledge sharing among government agencies [3]. Although there is an increment in term of percentage complaints solved, the adoption and

deployment of knowledge bank implementation reported by the scholars and how it can facilitate the knowledge transfer process is scarce. Furthermore, the knowledge bank focused more on the internal knowledge repositories among the public agencies without the absence of private agencies [2]. Riding on such issues, MAMPU formed a Special Interest Group for Knowledge Management (SIG-KMPS) in April 2010 to address the needs of KM in Malaysia Public Sector and to facilitate the public-private partnership. Since the government have been aggressively promoting the Shared Service and Outsourcing (SSO) industry, which undertake a full consideration of public-private partnership in supporting government transformation, it is crucial to consider a suitable framework of knowledge transfer that could support and facilitate transferring process during the outsourcing partnership.

Past researchers have suggested various organizational, human-related and IS-based mechanisms for improving knowledge transfer processes within and between organizations. Recent research has starts to integrate the concept of individual's mental memory towards organization. Organization by itself is a combination of various stages of memories ranging from internal memories until external memories (e.g. stakeholders/shareholders). Therefore, this paper attempts to provide a better understanding of the phenomenon of knowledge transfer in IT outsourcing and how the transferring process may be bridged by applying organizational memory concept with existing identified factors during IT outsourcing project execution in Malaysia government setting. The study presented in this paper complements the existing knowledge transfer research in the context of e-government IT outsourcing project, while contributing to the body of empirical KM research. The reminder of this paper is structured as follow: next section will discuss research background and Malaysia public agencies e-government IT outsourcing in general. The following section discusses the relevant literature to develop underpinning theories. We proposed our conceptual framework of knowledge transfer in IT outsourcing in section four. We conclude the paper by some final remarks in section five.

2. Research Background

2.1 Knowledge Transfer and IT Outsourcing

Knowledge transfer (KT) is defined as a dyadic exchange between individuals, groups or organizations, in which a recipient can understand, learn and apply knowledge transmitted from a source [4],[5],[6]. A thorough review of literature reveals that many authors and researchers have failed to provide a clear cut definition for KT and at the same times use the term "knowledge sharing (KS)" and

"knowledge transfer (KT)" interchangeably. However, recent scholars' works have made a distinction line between these two terms. Knowledge sharing primarily concerned with the individual's view while knowledge transfer concentrates more on the organizational view [7]. KS only takes the activities of giving or contributing, and is included under sub process of knowledge transfer. Furthermore, [8] asserts that KS does not include the receiving and reuse aspect of transfer. KT should involve active communication between two parties or active consultation for each other in order to learn what they both know. In a simple connotation, "people share knowledge" whereas "organizations transfer knowledge".

Some researchers have been arguing of knowledge transfer concept since knowledge resides in employees (human components of organization), task and interrelationship, tools and technology (software and hardware) and network coordination (internal or external network coordination). There is no simplest way to transfer knowledge from a brain of a human to another brain perfectly and easily like transferring files form one computer to another. Hence, the nucleus of knowledge transfer process is the knowledge receiver. The knowledge receiver must have capability to learn, to understand and to know for applying in right circumstance. In line with that, all knowledge transfer mechanism incorporate social interaction either from direct interaction or virtual interaction. Ambos and Ambos [9] identified two mechanisms; (1) by personal coordination mechanism such as personnel motion, training, jobs rotation [10], interactions with suppliers and customers [11], community of practices and post-project reviews [12], (2) by technology based coordination mechanism such as collaboration software, distributed learning and business intelligence system. Most of Malaysia public organizations are actually practicing knowledge transfer using mechanism like staff training, observation of experts, routines, meetings, standard operating procedures, manuals and databases where most of transferring knowledge process is the implication of strategic alliances, joint ventures, mergers and acquisitions. KT especially through strategic alliances has become a shot gun approach for a firm to acquire knowledge that it could not easily develop within its confines. One of the strategic alliances practices in Malaysia is through IT outsourcing. Public agencies can increase knowledge and diversity through outsourcing. However, this will not necessarily translate into increased organizational knowledge if the organizations failed to assign value to the knowledge they are transferring and receiving from the partnership.

During IT outsourcing partnership, client and vendor can develop two forms of knowledge transfer in terms of a

reciprocal learning [13]; 1) the partners can obtain from each other technical knowledge and know-how, 2) they can learn from each other management and business skills that individually they are lacking. Both the service receiver and provider should have a shared vision and goals for partnership as well as a belief that their partners will not act opportunistically [14]. Knowledge transferring or sharing throughout the IT outsourcing progress management should be given more attention for both sides. One side, vendors can transfer their IT special knowledge to clients, which helps client to improve their IT function; on the other aspect, clients also transfer their business knowledge to vendors, which will improve vendor's capability of understanding and implementing. Unfortunately, it appears that public sector organizations in developing countries especially Malaysia, have not received much attention in the research literature covering knowledge transfer especially in IT outsourcing. Most of the studies concentrate on the general knowledge management implementation or readiness at public agencies [15], Malaysian SME industries [16], aerospace industry [17], bank [18], telecommunication industry [19], higher education [20] to cite a few. There is only one work recently done by [21] focusing on knowledge transfer success factors in Malaysia setting. From the success factors the authors developed a theoretical framework for future work. Apparently, those researches never address the need of organizational learning context for an effective knowledge transfer. Therefore, it is crucial for this study to be taken and significantly give an insight and better understanding of the knowledge transfer processes in ITO.

2.2 Malaysia E-Government IT Outsourcing

In today's world, governments are increasingly under pressure for more profound change in structure and strategies to meet the requirements of contemporary society. Government needs to become more partnership-based, results-oriented, integrated, and externally focused. Therefore, government starts to serve their citizen thru electronic application. Malaysian government has starts their initiative in transforming their service delivery by launching seven flagship of e-government with the development of Multimedia Super Corridor (MSC) has become a jump starts of all current transformation. In order to focus more on servicing citizen, e-government outsourcing has become an important measure to reduce the pressures from cost, technical, as well as personnel. E-government Outsourcing in the Malaysia public sector has become an accepted management practice. Yang et al. [22] classified e-government outsourcing into two types; (i) system construction outsourcing (project in nature) and (ii) maintenance outsourcing (process in nature). Usually e-government outsourcing project will involve two or more

vendors working together for one particular project. The relatively high complexity, high uncertainty, and high risk of large e-government service projects favour a partnership approach. This government (clients)-private (vendors) partnership make the knowledge transferring process more problematic due to differences in the development and implementation of IS across sectors.

According to a joint publication by Outsourcing Malaysia and ValueNotes published in August 2009, revenues from the Malaysian ITO industry are expected to touch \$1.1 billion in 2009. The industry is expected to grow at a CAGR of 15% to reach \$1.9 billion by 2013. Currently, ITO services in Malaysia have a greater share of the overall outsourcing market, followed by Business Process Outsourcing (BPO) services; while knowledge services outsourcing is still in its nascent stage, has a smaller share. The interest in outsourcing is still growing especially among players in the banking (e.g: CIMB & Maybank), airline (Malaysia Airline System), manufacturing, healthcare, and government sectors. IT outsourcing has been identified as one of the main ways to address some demanding challenges faced by government. The shortage of IT expert and the difficulty of attracting and retaining the right IT talent ranked as the number one barrier that fuel the Malaysian government decision to outsource. Current e-government IT outsourcing activities in Malaysia are data entry, ICT hardware maintenance, network management service, web-hosting management and development and application system maintenance [2]. However, there is a trend for government and public agencies to shift to more interactive service delivery which are citizen-centered and based on networks and partnership between public, private and NGO and between levels of government. The use of application providers by government can help meet increasing e-government service demands by citizen and business alike.

Currently, Malaysian government has been practicing three types of IT outsourcing model for e-government application namely [2]; (1) BOT (*Build, Operate, Transfer*), (2) BOO (*Build, Operate, Own*) and (3) Contract Services. For *BOT* approach the provider or vendor need to develop the application according to the agencies requirement and manage the system operation for a certain time as stated in the contract. After the contract terminate, the vendor will hand over the application to the agencies that owned the project. Example applications for BOT approach that have been implemented are e-procurement (e-perolehan) own by Ministry of Finance (MOF) and The Electronic Budget Planning and Control System (e-SPKB) own by National Accountant Department (ANM). In contrast with *BOO* outsourcing approach, the vendor will provide and manage the ICT service without hand in back to the agencies. The

ownership of the services is still under vendor supervision. The last outsourcing approach is *contract basis service*. For this approach, the owner agency will give a contract to the vendor to develop or maintain the whole ICT devices but the ownership of the device belongs to the agencies not the provider. Most of Malaysia Public Agencies ITO contracts were three years or less since this duration had higher success rate compared to contract duration greater than three years [23].

Malaysian government has massively outsourced many e-government applications but scarce researches have focused on knowledge transfer processes in the outsourcing projects particularly for Malaysia environment. Although most of the success factors for ITO were rigorously considered based on principles and findings from previous research, which are frequently referred to [24], there are still some project that is not fully satisfied by the stakeholders or do not meet stated performance objectives [25]. Report from egov4dev.org (2009) has shown that e-government project failed because there is no lesson learned since knowledge about the failure was not captured, transferred or applied. As a result, mistakes were wastefully repeated. This claimed was also supported by [26] which examined the importance of knowledge transfer towards vendor's development that can create added value to the organizations. Giannakis [26] asserts that the failure of many initiatives revealed a twofold problem: first there is great difficulty in the generation and transformation of knowledge into organizational action and subsequently and even greater difficulty in the transfer of knowledge to partners. In addition, the acquired application may not be customized enough to effectively streamline or transform the business process. Moreover, this relates to the criticism that the vendors have limited understanding of the clients' business process [27]. IT outsourcing involves integrating and coordinating knowledge from many individuals of different disciplines and backgrounds, with varied experiences and expectations, located in different parts of the organization. Thus, both client and vendor should able to identify types of knowledge that is needed to be transferred during project execution, what mechanisms are appropriate and how the transferred knowledge can be retain in the organization for learning purposes and future use. To address the issues, we have drawn our research from two popular theories in Knowledge Management field as well as outsourcing field.

3. Literature Review

3.1 Theoretical Lens

According to [28], the popular theories being used in ITO research is the economic theory (e.g. Transaction Cost Theory & Agency Theory), followed by sociology theory

(e.g. Relational Exchange Theory & Social Exchange Theory) and lastly strategic management theory (e.g. Resource-Based Theory, Resource Dependence Theory). From the researcher literature review, for the past five years research in ITO and knowledge transfer, most researchers used multiple theoretical approaches rather than single theoretical approach. The most dominated theory behind the knowledge management activities in ITO project were two popular models; Resource-Based View Theory (RBV) and Knowledge-Based View Theory (KBV). From a sourcing perspective, RBV theorists have traditionally maintained that firms should not outsource any business function or activity that contributes to building and maintaining competitive advantage. According to this two theories postulated by [29] and [30], firms that established connections with external firms through mechanisms such as outsourcing run the risk of transferring vital knowledge and resources by engaging in sourcing partnerships. Other potential negative sourcing outcomes include creating competitors via vertical integration of sourcing partners and losing vital internal knowledge and resources by engaging in sourcing relationships with external partners. As a result, RBV called for a protectionist stance regarding outsourcing, recommending that firms should only outsource support functions that do not directly contribute to the firm's value added and competitive advantage generating mechanisms.

From a more proactive perspective, RBV and KBV tenets denote that firms may engage in outsourcing as a means of identifying, exploring, and transferring knowledge and resources from external sourcing partners to internal control. KBV proposes that IT outsourcing is a way to utilize vendor's professional knowledge and skills [31]. Although the knowledge-based view emphasizes the unique knowledge of the client firm [32], IT projects needs an integration of mix experience and new knowledge from the vendor. Client and vendor firms can create shared understanding from a successful exploration of specialized external knowledge. The exploration of external knowledge in IT outsourcing needs a knowledge integration of client domain knowledge and vendor technical knowledge during the development process. Without such integration, the unique knowledge of the client firm cannot be successfully leveraged in the outsourced custom-software development process. Consequently, IT outsourcing can be viewed as a boundary crossing mechanism through which firms can use sourcing relationships to gain access to resources critical to the firm's competitive advantage development or maintenance [33]. In such cases, client establishes a short-term relationship with an established outsourcing partner with the intent of transferring knowledge, human capital, and technologies from the client to the vendor. Additionally, [33] asserts, mechanisms emphasized in outsourcing strategy can range from the (i) transferring of

knowledge to help develop internal capabilities, (ii) by the hiring an experts personnel from the sourcing firm to build up internal capabilities for the partner, (iii) by the outright acquisition of the sourcing firm to internalize capabilities previously existing externally and lastly (iv) by aligning client's needs with vendor possessing complementary resources and capabilities. In such cases, outsourcing partners may provide the combination of complementary knowledge bases with a lack of direct competition that can fuel innovation of a new application/technology and service development. Hence, RBV and KBV perspectives provide valuable insights for the business rationale of IT outsourcing practices. Many researchers have found them useful in explaining specific aspects of outsourcing decisions, processes and outcomes using KBV and RBV theoretical lens. Thus, many researchers [39],[35] have placed these two theories as the theoretical lens to the KT model or their framework specifically for ITO environment.

3.2 Knowledge Transfer Model

King et al. [4] appointed two important element in developing effective organizational knowledge; (i) communication and (ii) information processing. There are three models dominated within the knowledge transfer area. Most of the existing KT models were rooted from communication model, group information processing model and knowledge creation model. Communication based model was elucidated by [36] and later being improvised by [37] while the second is based from Hinsz's [38] model. The third one is based from Nonaka's [39] knowledge creation model. Within the communication-based approach, the transfer of knowledge is regarded as a message encoded in a medium by a sender to a recipient in a given context. Schramm's [36] communication model initially consisted of three elements; (i) Sender, (ii) Recipient and (iii) Message. The receiver becomes the "recipient" or "user", since it is the subject who learns or acquires knowledge (not simply the message receiver) whereas; the "sender" is the knowledge holder. The message becomes the "object", as it can be produced by complex knowledge. Schramm's [40] later enhanced the model by including Media. Media is the channels used to communicate the message, palliate its passage, and enhance its chances of completing a communicative act. Schramm's [40] model becomes the most referred basic model in many knowledge transfer framework. Subsequently, [37] improvised the basic model developed by Schramm's [40] by considers six factors: Knowledge source, Message, Knowledge receiver, Channel, Feedback and Environment or Organizational context.

Apart from viewing KT from communication lens, scholars started to integrate the communication model with group information processing model to enhance the existing KT

model. In order for the organization to learn something, the members need to process the data or information that they got to better suit the organization. Hinsz et al. [38] has postulated three components in the information processing model: *encoding* (i.e. forming knowledge representations through interpretation, evaluation and transformation), *storing* (i.e. entering representations in the memory system), and *retrieval* (i.e. accessing and using representations from the memory system). This concept is closed to human cognitive system. Later, Gibson [41] starts to improvised Hinsz's model by expanding the information processing into four stages; accumulation, interaction, examination and accommodation. However, Gibson's model is applicable if the accumulated knowledge is highly ambiguous and the processing does not occur in a linear time order. The main similarity between these two models is the need of social interaction along each phase.

From [42] framework of knowledge generation, the transfer of knowledge is seen as the creation of knowledge through four modes of knowledge conversion of explicit and implicit forms of knowledge: externalization (from implicit to explicit), combination (from explicit to explicit), socialization (from implicit to implicit) and internalization (from explicit to implicit). Nonaka and Takeuchi [42] visualized the knowledge conversion process as cyclic process and happen mainly through informal networks of relations in the organization starting from the individual level, then moves up to the group (collective) level and eventually to the organizational level. However, according to [43], Nonaka's model does not describe how to initiate the macro level process for individuals or groups to manage the knowledge and to be innovative. Gourly [44] further claimed that Nonaka only proposed two modes of knowledge creation; internalization and externalization, whereas; socialization and combination are modes of knowledge transfer. Based from the discussed constraint, [45] develops an integrative cognitive architecture model for groups with the combination of three subsystem; selection subsystem, memory subsystem and communication subsystem. Curseu [45] claimed that the comprehensive group information processing models should consist of communication based view, knowledge creation based and memory based system. The proposed information processing model can be integrated with communication model, Gibson's model, Nonaka's Model and Transactive Memory theory. This model is suitable at the organizational level unit of analysis for example this model appropriate for distributed group members and virtual project team. However, the group members must be anonymous.

Besides the three basic models as the basis to the KT model developed by past researchers, scholars have also embodied KT antecedents and consequences in the model. Prior

studies have investigated the role of knowledge characteristics, such as ambiguity, in determining knowledge transfer [10]. Other studies have examined sender-receiver characteristics, such as absorptive capacity and motivation [46],[47] or organization context [48],[49]. In spite of that, current trends in knowledge transfer research have also comprised project nature [5][35] factors in developing the model since most of the transferring process occurred during the project execution or alliances. Table 1 summarized a few KT components that being derived from the past research. These components have been reviewed by most of the scholars in KT research and significantly gives effect on KT process in ITO.

In spite of all factors discussed above, organization information system is claimed to be an effective tools to support knowledge transfer process. However, most of the organizational knowledge is based on the information stored in legacy information systems which have been developed in an isolated way [59]. Therefore, such information can be inconsistent, redundant and difficult to retrieve and link. The information that ends up in the most organizational information system has a poor structure (e.g., PDF documents), which makes the system unmanageable and chaotic, limiting the possibility to deal with other system requirements, such as information privacy and fast and flexible retrieval methods [59]. It was suggested that the organizational information memory system should have the capability to provide an experts database with points of contact on various topics [60], support both formal and informal knowledge besides the automatic privacy mechanism [59]. Hence, recent scholars have connected organizational information memory system (OMIS) with the Transactive Memory System (TMS) to facilitate the interaction of organizational knowledge [61],[62],[63].

Table 1: Knowledge Transfer Component

| Components | Characteristics | Authors |
|------------|--|------------------------------|
| Source | Disseminative Capacity Reliability Credibility Willingness to share | [10],[35],[50], [47],[49] |
| Recipient | Absorptive Capacity Motivation Learning intent Retentive Capacity | [50],[51] |

| | | |
|----------------|---|------------------------|
| Knowledge | Knowledge Ambiguity Stickiness Complexity Tacitness | [47],[51],[52] |
| Organizational | Organizational Culture Personnel Movement Community of Practices Management Practices Organizational Structure Organizational Learning Strategy | [53],[54],[55] [56] |
| Communication | Codification Interpretation Communication Channel | [57] |
| Relationship | Arduous Relationship Dyadic relation Strength of ties Network density Social Similarity | [10],[58],[57] |
| Project Nature | Prior collaboration history Team size Project complexity Project phase | [35] |

3.3 Organizational Memory System and Knowledge Transfer: The Role of Transactive Memory System (TMS)

KT process comprises four activities; knowledge conversion, knowledge routing, knowledge dissemination and knowledge application [64]. Within these practices, effective transfer and use of organizational knowledge depends to a large extent on the organization's ability to create and manage its collective memory. The organization itself has been seen as a repository of knowledge [65]. The organization's knowledge repositories or knowledge stock are found in individual members, roles and organizational structures, standard operating procedures and practices, culture and physical layout of the workplace [64]. This collective memory is often referred to as organizational memory (OM). To support effective management of organizational memory, [66] proposed the use of information technology to accomplish four specific processes related to organizational memory: acquisition,

retention, maintenance, and search and retrieval. In addition, they outline a design for an organizational memory information system (OMIS).

However, [67] argued that the proposed OMIS architecture by [66] faced several challenges. According to them, much of the knowledge in the OM is contextualized and consequently the knowledge interpreted wrongly. A second challenge regarding the locations of knowledge since OM generally resides in different types of retainers. These retainers of OM may be in dispersed location and their memories might be difficult to combine. A third problem with OM management is that knowledge is often tacit which is difficult to track and maintain in large organizational memories. A fourth problem concerns with the unpredictability of organizational knowledge. This unpredictability results in frequent changes to the contents of the OM measure of the retainer's legitimacy and reliability is required. These five problems create difficulties for members of the organization in retrieving and using knowledge that resides in OM. Therefore, to gain a better understanding of possible ways to overcome the barriers for efficient OM management, [67] proposed the concept of Transactive Memory Systems (TMS) being incorporated with OM.

One of the philosophical theories that have been embedded in the concept of organizational memory is Transactive Memory theory. Transactive Memory theory becomes Transactive Memory System when [68] started to model human memories in a concept of computer network. Transactive memory is a system for encoding, storing, and retrieving information in groups [68]: it is a set of individual memory systems in combination with the communications that take place between individuals. Originally, TMS was used to describe the ways in which dyads (such as married couples) that are close to one another share knowledge and allocate responsibilities for knowing. Extending the notion of TMS beyond groups and pairs, several authors have speculated on how organizations might function as TMS with an input of information system architecture. Anand et al. [46] proposed certain forms of information systems, such as intranets, search engines, standardized concepts and vocabularies, could be used to enhance the functioning of TMS. Nevo and Wand [67] proposed directories of meta-knowledge to overcome the knowledge storage and location problems as stated before. The computerized directories of meta-memory can compensate for the lack of the group's tacit knowledge. Even so, the work on organizational TMS has been conceptual rather than empirical. There have been no descriptions of working organizational TMS in the literature.

Therefore [62] have proposed a model of the operation of an organizational TMS. This model focused more on organizational KM codification strategy rather than personalization strategy since the aim of suggested model was to connect people with reusable codified knowledge. Jacobson and Klobas [62] have divided organizational TMS into four main activities instead of three activities postulated by [68]. The nucleus of organizational TMS is the directory or the knowledge repositories. The directory consists of metadata about people, including name, organizational role and formal group membership, work experience, areas of expertise and other information such as availability and reliability as a source of knowledge. Some of the metadata for some people in a TMS will be stored in a person's head, but other metadata can be stored externally, in a CV or expertise database, a document management or knowledge management system, on the organization's intranet or in handbooks, or in the heads of intermediaries such as managers, administrators and other colleagues who act as gatekeepers or links in a chain to the ultimate source of the knowledge. The second activity is directory maintenance. According to them, directory can be maintained by formal and informal procedures. Formal procedures might include the updating of metadata and other information in organizational information systems whereas informal procedures include discussions held alongside formal meetings or serendipitous meetings in the corridor or coffee room. The third activity is retrieving process from the directory. The directory allows knowledge to be retrieved from one's own work group(s) and from others in the organization. Much of the information retrieval from one's own group might be in the form of conversations although this retrieval might be supported by information systems that record knowledge in the form of documents. Finally, knowledge allocation would be the fourth activity evoked [62]. They argued that knowledge is allocated and stored on the basis of several activities ranging from formal allocation of responsibility and transfer of knowledge among people in the organization to individual learning. This view provides a framework to guide development of a holistic TMS for a particular organization. It allows a view of what an information system might provide and what is best done (or indeed must be done) through interpersonal means.

4. Conceptual Framework

The underpinned framework for this study is derived from the in-depth study on IT/IS outsourcing, knowledge transfer, information processing literature and organizational learning. Previous research has examined a range of antecedents of organizational knowledge transfer. For this research purposes, this study included only

antecedents that have been studied extensively across multiple studies and align conceptually. This enabled researcher not only to compare antecedents, but also to make sure the antecedents studied are deemed relevant by the research community. Consistent with prior literatures, the researcher classifies antecedents of inter-organizational knowledge transfer into four domains: organization memory system factors, client-related factors, vendor-related factors while project management factors as controlled variables. This paper contributes to the existing literature by examining how organization memory system can facilitate the knowledge transfer process between client and vendor involved in IT outsourcing relationship besides the other three most cited determinants. From the IT project management perspectives, organization shared cognition are able to successfully manage project interdependencies [69]. Fig. 1 illustrates the proposed conceptual framework for the study.

4.1 Variables

The dependent variable in the research framework is 'knowledge transfer'. The operationalize definition of knowledge transfer for this research was drawn upon the communication theories, whereby transfer of knowledge is define as a method that involves two-way communication between the client and the vendor exchange and share their useful information/ skill/ competencies or routines about the project and both parties is affected by changes in recipient replication and adaptation capabilities and changes in skills/knowledge. Knowledge from this research context is organizational knowledge whereby "knowledgeable" organization can be seen through daily basis routines and the systematic structure of workflow. A vendor corresponds to the knowledge source involved in transferring knowledge or the generalized knowledge resource, whereas; client act as knowledge receiver, and the destination or the entity which receives and internalizes the knowledge content. Further, within the knowledge transfer context, the transmission element corresponds to the activities and processes, such as communication activities, through which knowledge is transferred from one entity to the other.

Meanwhile, the independent variables are measured by three domains; vendor characteristics, client characteristics and organizational memory context. Each of the domains is observed by several items that have been selected from Table 1. Researchers only take the items that empirically give significant or positive impact towards knowledge transfer. The negative impact has been eliminated to ensure the high validity and reliability of each construct. Client in this research context is the Malaysian public agencies act as the recipient of knowledge that outsourced the E-government application to the third parties. Meanwhile,

vendor is conceptualize as a third-party entity act as the source of knowledge that develop, manages and distributes E-government application and solutions to public agencies. Vendor characteristics are measured by vendor credibility, willingness to share, disseminative capacity and knowledge integration. For client characteristics, researchers have chosen four measurable item; absorptive capacity, retentive capacity, conjecture and motivation. Researchers have also incorporated Transactive Memory System (TMS) as proposed by [62] and [61]. Although the most popular measurement of TMS is elucidated by [70], by which TMS is measured by specialization, coordination and credibility, we argue that the early measurement developed by [71] is based from the activities memory recall of dyads that working together and it is most suitable of TMS form individual's perspective rather from organizational perspective. Therefore, we have extracted the main organizational routines that involves during outsourcing project as presented in [61][71] and [72] interpretive research. Therefore, TMS is measured from the organizational project routines that encoding and updating directories, coordinating and retrieval, allocating and storing and lastly directory content.

Much of the academic research on information system project management has been done in the context of software development and maintenance in the "traditional" computing paradigm in which the majority of software projects involve the custom development of applications [35]. There is a lack of empirical investigation of the issues related to the IT outsourcing projects. Control variables in this model are derived from project management literature, but we labelled it as project nature. Thus in this research, four control variables are included in the framework: prior collaboration history, team size, project complexity and project phase.

4.2 Framework Hypotheses

Generally there are two main stream of KT approaches [73]; (1) Information Science approach (knowledge as an object) and (2) Constructivist approach (knowledge as process, a set of dynamic skills and know-how). The Western or Europe companies prefer Information Science approach. In contrary, Japan companies much emphasized on constructivist approach [74]. In this study, we developed our framework by integrating both approaches. We viewed TMS from Information Science approach. Within this approach, knowledge is viewed as an object that can be created, stored, and retrieved. Meanwhile, the other three variables (client characteristics, vendor characteristics and knowledge transfer) are from constructivist approach. In this approach, knowledge is primarily viewed as a process, a set of dynamic skills and

know-how that is constantly changing. Constructivist approach is involved with assessing, changing, and improving IT outsourcing team skills and behaviour. We integrate both approaches depending on the type of knowledge in IT outsourcing project. IT outsourcing project consists of procedural and domain specific knowledge. Procedural knowledge is tacit in nature while domain specific knowledge is explicit in nature. The proposed conceptual framework is presented in Fig. 1. We derived 12 hypotheses from each constructs that relates.

4.2.1 Vendor Characteristics

Many studies have examined the effect of knowledge source on knowledge transfer. The knowledge source in this research refers to the vendor that develops or provides the e-government applications or infrastructures. There are four characteristics of vendor that being measured in this study; vendor's credibility, vendor's willingness to share, vendor's disseminative capacity and vendor's capability to integrate knowledge from various units/departments. Vendor's credibility is generally defined as the extent to which a client perceives a vendor to be trustworthy and reputable [35]. Thus from the definition, the credibility concept has two dimensions: trust and reputation. Knowledge transfer researchers have indicated trust as the core ingredient in order for individuals to transfer knowledge [10]. Trust 'reflects the belief that a partner's word or promise is reliable and that a partner will fulfil its obligations in the relationship' [65]. When client credibility is high, client are likely to be more open and receptive to information from the vendor; ideas in the asset are perceived to be worthy of consideration. The knowledge conveyed is thus more likely to be seen as useful, and to influence the behavior of the recipient [10]. The importance of a client's credibility is amplified in the context of a knowledge transfer process because this process is not amenable to enforcement by contract [75].

Besides vendor's credibility, we also measures knowledge sharing initiatives in the project. Lee [14] and [35] have showed that knowledge sharing is a major indicator of whether or not the outsourcing activity succeeds. Those studies confirms that knowledge sharing is one of the major predictors for outsourcing success because IT outsourcing posses highly valuable knowledge relating to the product development, the software development process, project management and technology in general [76]. Therefore we operationalized willingness to share as vendor attitude which vendor is willingly to provide access towards others about knowledge and his experiences. Willingness to share is operationalized based on the intensity level of vendor in doing tacit and explicit knowledge sharing with his client in ITO project.

Willingness to share also relates to the vendor's disseminative capacity.

Disseminative capacity refers to the vendor capacity to contextualize, format, adapt, translate and diffuse knowledge through a social or technological network and to build commitment from stakeholders [77]. In the context of IT outsourcing, individual members who control and distribute resources, information and knowledge can largely affect the performance of the whole project team [78]. The fourth constructs is knowledge integration. Knowledge integration is defined as individual members who control and distribute resources, information and knowledge can largely affect the performance of the whole project team [78]. In an IT outsourcing project, the users from the client organization communicate system requirements to the vendor's IT consultants who use their software expertise and knowledge from the users to build the system. Users then assimilate the system by making necessary changes to their work. Knowledge integration is essential since if knowledge from a particular cluster is missing or is not integrated. Therefore, we derived four hypotheses from vendor characteristics:

H1a: Vendor credibility significantly gives an impact towards vendor characteristics for knowledge transfer processes in IT outsourcing at public agencies

H1b: Vendor willingness to share significantly gives an impact towards vendor characteristics for knowledge transfer processes in IT outsourcing in public agencies

H1c: Vendor disseminative capabilities significantly give an impact towards vendor characteristics for knowledge transfer processes in IT outsourcing in public agencies

H1d: Vendor knowledge integration significantly gives an impact towards vendor characteristics for knowledge transfer processes in IT outsourcing in public agencies

4.2.2 Client Characteristics

Second independent variables involved in this research are the client factors. There are four independent variables has been identified in this research that influence the process of transferring knowledge in IT outsourcing project; absorptive capacity, retentive capacity, communication competence and motivation. Most scholars stress that the studies of knowledge transfer should concern not only whether knowledge owners have a willingness to share, but also whether knowledge receivers can learn and absorb. Therefore, absorptive capacity affects vendor ability to recognize the importance and value of new knowledge, to assimilate the knowledge, and to apply it to solve the

problem. We defined absorptive capacity as the ability of the client to acquire new external knowledge, assimilate or transform the knowledge into usable knowledge then apply it to business ends. The definition emerges two subsets; potential absorptive capacity and assimilation and realized absorptive capacity. The client needs to actually know their prior knowledge and their ability to value new knowledge that they received from vendor for example through training or project maintenance. A transfer of knowledge is effective only when the knowledge transferred is retained. The ability of a recipient to institutionalize the utilization of new knowledge reflects its 'retentive' capacity [10]. According to [7], clients' retentive capacity differs from absorptive capacity because absorptive capacity refers to an indication of initial short-term memory, whilst; retentive capacity refers to long-term memory.

Communication competence can be defined as the extent by which the client and vendor have a frequent routine of formal (in terms of task-achieving issues) or informal (out of role) interaction and conversation regarding project-relevant information. The uncertainty situation in IT outsourcing, impacts the process of knowledge transfer among clients' and vendors' that emerged the importance of communication competence. On top of that, clients need the motivation to accept and absorb the new external knowledge. The motivation of the client refers to the client's desire to implement the knowledge or technology being transferred. Lack of motivation in knowledge transfer will result in passiveness, feigned acceptance or implementation, hidden sabotage, intentionally slow implementation, or directly reject the practice. From the above argument, we posit four hypotheses from client variables;

H2a: Client absorptive capacity significantly gives an impact towards client characteristics for knowledge transfer processes in IT outsourcing in public agencies

H2b: Client retentive capacity significantly gives an impact towards client characteristics for knowledge transfer processes in IT outsourcing in public agencies

H2c: Client communication competence significantly gives an impact towards client characteristics for knowledge transfer processes in IT outsourcing in public agencies

H2d: Client motivation significantly gives an impact towards client characteristics for knowledge transfer processes in IT outsourcing in public agencies

4.2.2 Organizational Memory Context: TMS

Knowledge transfer in a group encompasses various practices of managing organizational knowledge. Effective transferring and use of organizational knowledge depend on a large extent on the organization's ability to create and manage its collective memory. This collective memory is often referred to as organizational memory (OM). In relation to IT outsourcing, such memory resides in business professionals from clients' side and IT specialists from vendors' side, policies, contract/agreement, and culture. These retainers of OM may be in different locations and their memories might be difficult to combine. There are three processes of TMS that affect knowledge transfer within an IT outsourcing team [79]; first, the directory updating function allows group members to be aware of the location of the expertise possessed by specific individuals. Secondly, information allocation and function represents the process of distributing knowledge to the members whose expertise is best suited for its storage. Third, the retrieval coordination function shows how to retrieve needed information on any topics based on related knowledge from individual expertise in the memory system. In this paper, we enhanced the TMS concepts by incorporating other information processing activities like encoding, coordinating, storing and relevant organizational directories content to support the knowledge transferring processes. Thus, scholars have increasingly considered the concept of the TMS as an enhancer of inter-organizational knowledge transfer [61][67] and to develop an organizational knowledge memory system [62]. While the concept of TMS has been studied in the context of traditional organizational forms and co-located teams, little is known about the process through which a TMS in distributed teams could be created and could support knowledge transfer between remote sites like a case in IT outsourcing. We measure TMS in terms of the project routines to encoding and updating the directories, coordinating and retrieval process, allocating and storing of project information or data in the organizational memory systems. Thus, we believe that TMS will facilitate the knowledge transferring process;

H3a: The relevant organizational directories content will facilitate knowledge transfer in IT outsourcing at public agencies

H3b: The project routines of encoding and updating project documents will facilitate knowledge transfer in IT outsourcing at public agencies

H3c: The project routines of coordinating and retrieval project documents will facilitate knowledge transfer in IT outsourcing at public agencies

H3d: The project routines of allocating and storing project document will facilitate knowledge transfer in IT outsourcing at public agencies

into ITO specifically for Malaysia e-government initiatives.

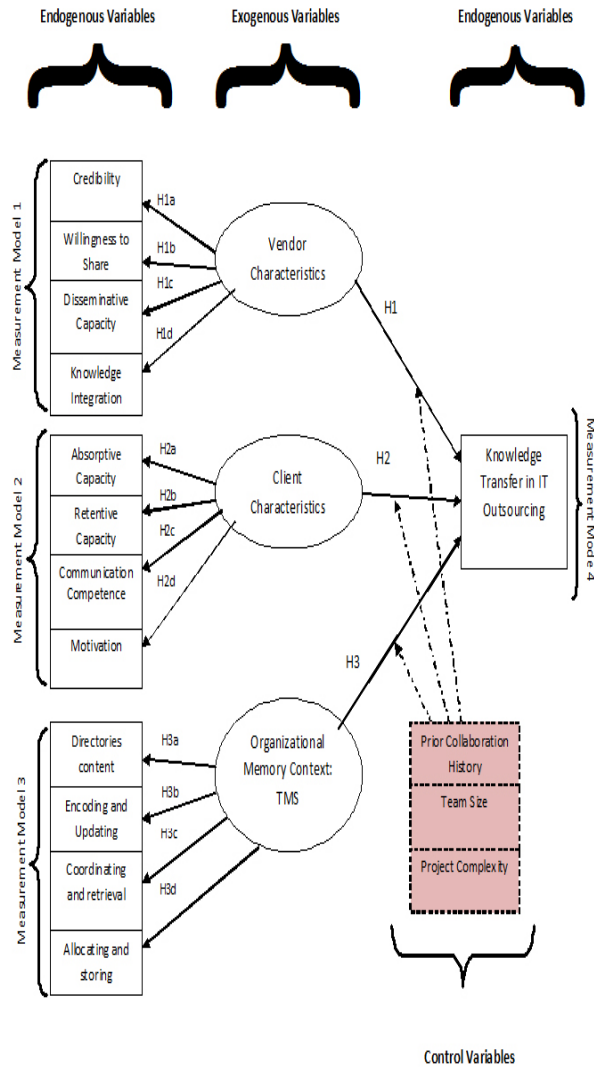


Fig. 1 Proposed Conceptual Framework.

5. Final Remarks

This conceptual paper proposed an integrative preliminary framework that links four groups of key domains namely; client related characteristics, vendor related characteristics, Transactive Memory System context and project nature factors while discussing the theories and models behind the proposed model. This conceptual model is still based on literature study. Therefore, it needs further research to empirically validate the model. We believed that the application of the framework may provide useful insights

References

- [1] B. Hackett, "Beyond Knowledge Management: New Ways to work and Lear", The Conference Board, Research Report, 2000, 1262-00-RR.
- [2] MAMPU. *Malaysia Public Agencies IT Outsourcing Guideline*. Retrived November 20, 2009, from <http://www.mampu.gov.my/pdf/Garis-Panduan-IT-outsourse.pdf>
- [3] Z. Yusof, and M. B. Ismail, "Is There A Relationship Between Knowledge Sharing Practice And The Quality of Service Delivery? A Case Study In Three Governemnet Agencies In Malaysia", *Journal of Knowledge Managementy*, Vol. 10, No. 1, 2009.
- [4] R. C. King, W. Xia, J. C. Quick, and V. Sethi, "Socialization and organizational outcomes of information technology professionals", *Journal of Career Development International*, Vol. 10, No. 1, 2005, pp. 26-51.
- [5] D. G. Ko, L. J. Kirsch, and W. R. King "Antecedents of knowledge transfer from consultants to clients in enterprise system implementations", *MIS Quarterly*, Vol. 29, No. 1, 2005, pp. 59-86.
- [6] L. Argote, B. McEvily, and R. Reagans, "Introduction to the Special Issue on Managing Knowledge in Organizations: Creating, Retaining, and Transferring Knowledge", *Management Science*, Vol. 49, No. 4, 2003, pp. 5-8.
- [7] D. G. Schwartz, "Integrating knowledge transfer and computer-mediated communication: categorizing barriers and possible responses" *Knowledge Management Research & Practice*, Vol. 5, Issue August, 2007, pp. 249-259.
- [8] J. A. Kumar, and L. S. Ganesh, "Research on knowledge transfer in organizations: a morphology", *Journal of Knowledge Management*, Vol. 13, No. 4, 2009, pp.161-174.
- [9] T.C. Ambos, and B. Ambos, "The impact of distance on knowledge transfer effectiveness in multinational corporations", *Journal of International Management*, Vol. 15, No. 1, 2009, pp.1-14.
- [10] G. Szulanski, "The process of knowledge transfer: a diachronic analysis of stickiness, *Organizational Behaviour and Human Decision Processes*, Vol.82, No. 1, 2000, pp. 9-27.
- [11] D. C. Mowery, J. E. Oxley, and B.S. Silverman, "Strategic Alliances and Interfirm Knowledge Transfer", *Knowledge Creation Diffusion Utilization*, Vol. 17, 1996, pp. 77-91.
- [12] A. M. Ghassani, "Improving the Structural Design Process: a Knowledge Management Approach", Unpublished doctoral dissertation. Loughborough University, 2003.
- [13] J. Connell, and R. Voola, "Strategic alliances & knowledge sharing: Synergies or silos?" *Journal of Knowledge Management*, Vol. 11, No. 3, 2007, pp. 52-66.
- [14] J. N. Lee, "The impact of knowledge sharing, organizational capability and partnership quality on IS outsourcing success", *Information and Management*, Vol. 38, No. 5, 2001, pp. 323-335.
- [15] S.O.S Syed-Ikhsan, and F. Rowland, "Benchmarking knowledge management in a public organisation in Malaysia", *Benchmarking: An International Journal*, Vol. 11, No.3, 2004, pp.238-266.

- [16] K. W. Wong, "An exploratory study on knowledge management adoption in the Malaysian industry", *International Journal of Business Information System*, Vol. 3, No. 3, 2008, pp. 272-283.
- [17] L.W. Tat, and S. Hse, "Knowledge Management in The Malaysian Aerospace Industry", *Journal of Knowledge Management*, Vol.1, No. 1, 2007, pp. 143-151.
- [18] H. M. Ali, and N. H. Ahmad, "Knowledge Management in Malaysian Banks: A New Paradigm", *Journal of Knowledge Management Practice*, Vol. 7, No. 3, 2006.
- [19] C.C. Wei, C.S. Choy, and W.K. Yew, "Is the Malaysian telecommunication industry ready for knowledge management implementation? ", *Journal of Knowledge Management*, Vol. 13, No. 1, 2009, pp. 69 – 87.
- [20] S.D. Ramachandran, S.C. Chong, and H. Ismail, "The practice of knowledge management processes: A comparative study of public and private higher education institutions in Malaysia", *Vine*, Vol. 39, No. 3, 2009, pp. 203-222.
- [21] A. Mohamed, N. H. Arshad and N. A. Abdullah, "Influencing factors of knowledge transfer in IT outsourcing", *Proceedings of the 10th WSEAS international conference on Mathematics and computers in business and economics*, 2009, pp.165-170.
- [22] J. Gao, W. Yang, and G. Fang, "A study on government-dominated e-government outsourcing model", *Proceedings of the 3rd International Conference on Theory and Practice of Electronic Governance - ICEGOV '09*, 2009, 235. New York, New York, USA: ACM Press.
- [23] M. C. Lacity, S. A. Khan, and L. P. Willcocks, "A review of the IT outsourcing literature: Insights for practice", *Journal of Strategic Information Systems*, Vol. 18, No. 3, 2009, pp.130-146.
- [24] J. Moon, G. Jung, M. Chung, and Y. C. Choe, "IT outsourcing for E-government: Lessons from IT outsourcing projects initiated by agricultural organizations of the Korean government", *40th Annual Hawaii International Conference on System Sciences (HICSS'07)*, 2007, pp. 104a.
- [25] R. T. Nakatsu and C. L. Iacovou, "A comparative study of important risk factors involved in offshore and domestic outsourcing of software development projects: A two-panel Delphi study", *Information and Management*, Vol. 46, No. 1, 2009, pp. 57-68.
- [26] M. Giannakis, "Facilitating learning and knowledge transfer through supplier development", *Supply Chain Management: An International Journal*, Vol. 13, No. 1, 2004, pp.62-72.
- [27] Y. Chen, and J. Gant, "Transforming local e-government services: the use of application service providers", *Government Information Quarterly*, Vo. 18, No.4, 2001, pp. 343-353.
- [28] T. Benedikt, M. Frank, "Why risk management matters in it outsourcing – a systematic literature review and elements of a research agenda", *17th European Conference on Information Systems*, 2009, pp. 1-13.
- [29] J. Barney, "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, Vol. 17, 1991, pp. 99-120.
- [30] B. Wernerfelt, "The resource-based view of the firm: Ten years after", *Strategic Management Journal*, Vol. 6, No.3 1995, pp. 171-174.
- [31] M. Li and D. Li, "A Survey and Analysis of the Literature on Information Systems Outsourcing," *Pacific Asia Conference on Information Systems*, 2009.
- [32] R. M. Grant, "Toward A Knowledge-Based Theory of The Firm", *Strategic Management Journal*, Vol. 17, Winter Special Issue, 1996, pp. 109-122.
- [33] J. Combs and T. Crook, "Sources and consequences of bargaining power in supply chains", *Journal of Operations Management*, Vol. 25, No. 2, 2007, pp. 546-55.
- [34] S. Blumenberg, H. Wagner and D. Beimbom, "Knowledge transfer processes in IT outsourcing relationships and their impact on shared knowledge and outsourcing performance", *International Journal of Information Management*, Vol. 29, No. 5, 2009, pp. 342-352.
- [35] K.D. Joshi, S. Sarker and S. Sarker. "Knowledge transfer within information systems development teams: examining the role of knowledge source attributes", *Decision Support Systems*, 43, No. 2, 2007, pp. 322-335.
- [36] W. Schramm, "The Process and Effect of Mass Communication", Urbana, University of Illinois Press, 1954.
- [37] C.M. Jacobson. "Knowledge sharing between individuals, in Schwartz, D.G. (Eds), *Encyclopedia of Knowledge Management*", Idea Group Reference, Hershey, PA, 2006, pp. 507-14.
- [38] V.B. Hinsz, R.S. Tindale and D.A. Vollrath, "The emerging conceptualization of groups as information processors", *Psychological Bulletin*, Vol. 121, No. 1, 1997, pp. 43-64.
- [39] I. Nonaka, "A Dynamic Theory of Organizational Knowledge Creation", *Organization science*, Vol. 5, No. 1, 1994, pp. 14-37.
- [40] W. Schramm, "Mass Communication: a Book of Readings", Urbana, University of Illinois Press, 1960.
- [41] C.B. Gibson, "From knowledge accumulation to accommodation: cycles of collective cognition in work groups", *Journal of Organizational Behavior*, 22, 2001, pp. 121-34.
- [42] I. Nonaka and H. Takeuchi, "The Knowledge-creating Company", Oxford University Press, New York, 1995.
- [43] K. Sherif, and B. Xing, "Adaptive processes for knowledge creation in complex systems: The case of a global IT consulting firm", *Information and Management*, Vol. 43, No. 4, 2006, pp. 530-540.
- [44] S. Gourlay, "Conceptualizing knowledge creation: a critique of Nonaka's theory", *Journal of Management Studies*, Vol. 43, No. 7, 2006, pp. 1415-1436.
- [45] P. P. Curseu, R. Schalk, and I. Wessel, "How do virtual teams process information? A literature review and implications for management", *Journal of Managerial Psychology*, Vol. 23, No. 6, 2008, pp. 628-652.
- [46] V. Anand, C.C. Manz and W.H. Glick, "An organizational memory approach to information management", *Academy of Management Review*, Vol. 23, No. 4, 1998, pp. 796-809.
- [47] M. Easterby-smith, M.A. Lyles and E.W. Tsang. *Inter-Organizational Knowledge Transfer: Current Themes and Future Prospects*, *Journal of Management Studies*, Vol. 45, No. 4, 2008, pp. 677-690.
- [48] U. Wilkesmann, H. Fischer and M. Wilkesmann, "Cultural characteristics of knowledge transfer". *Journal of*

- Knowledge Management, Vol. 13, No. 6, 2009, pp. 464-477.
- [49] R. Gregory, R. Beck and M. Prifling, "Breaching the Knowledge Transfer Blockade in IT Offshore Outsourcing Projects – A Case from the Financial Services Industry", Proceedings of the 42nd Hawaii International Conference on System Sciences. IEEE, 2009, pp. 1-10.
- [50] S. Sarker, S. Sarker, D. Nicholson, K.D. Joshi, "Knowledge Transfer in Virtual Systems Development Teams: An Exploratory Study of Four Key Enablers", IEEE Transactions on Professional Communication, Vol. 48, No. 2, 2005, pp. 201-218.
- [51] Q. Xu and Q. Ma, "Determinants of ERP Implementation Knowledge Transfer", Information and Management, Vol. 45, No. 8, 2008, pp. 528-539.
- [52] L. Pérez-Nordtvedt, B.L. Kedia, D.K. Datta, and A.A. Rasheed, "Effectiveness and efficiency of cross-border knowledge transfer: an empirical examination", Journal of Management Studies, Vol. 45, No. 4, 2008, pp. 714-744.
- [53] L.Z. Cantu, J.R. Criado, and A.R. Criado, "Generation and transfer of knowledge in IT-related SME's", Journal of Knowledge Management, Vol. 13, No. 3, 2009, pp. 243-256.
- [54] K.U. Ajmal, and M. M. Koskinen, "Knowledge Transfer in Project-Based Organizations: An Organizational Culture Perspective", Project Management Journal, Vol. 39, No. 1, 2008, pp. 7-15.
- [55] J. Rhodes, R. Hung, P. Lok, B.Y.-hui Lien, and C.-min Wu. "Factors influencing organizational knowledge transfer: implication for corporate performance", Journal of Knowledge Management, Vol. 12, No. 3, pp. 84-100.
- [56] C. Dhanaraj, M.A. Lyles, H.K. Steensma, and L. Tihanyi, "Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance", Journal of International Business Studies, Vol. 35, No. 5, 2004, pp. 428-442.
- [57] B. Uzzi and R. Lancaster, "The role of relationship in inter-firm knowledge transfer and learning the case of corporate debt markets", Management Science, Vol. 49, No. 4, 2003, 383-399.
- [58] L. Agrote, P. Ingram, J. M. Levine and R. L. Moreland "Knowledge Transfer in Organizations: Learning from the Experience of Others", Organizational Behavior and Human Decision Processes, Vol. 82, No. 1, 2000, pp. 1-8.
- [59] S.F. Ochoa, V. Herskovic, and E. Pineda, "A transformational model for Organizational Memory Systems management with privacy concerns", Information Sciences, Vol. 179, No. 15, 2009, pp. 2643-2655.
- [60] C. H. T. Goh and V. Hooper, "Knowledge and information sharing in a closed information environment". Journal of Knowledge Management, Vol. 13, No. 2, 2009, pp. 21 - 34.
- [61] I. Oshri, P.C.V. Fenema, and J. Kotlarsky. "Knowledge Transfer in Globally Distributed Teams: The Role of Transactive Memory", Information Systems Journal, 18, 2008, pp. 593-616.
- [62] P. Jackson and J. Klobas. "Transactive memory systems in organizations: Implications for knowledge directories", Decision Support Systems, Vol. 44, 2008, pp. 2409-424.
- [63] J. Kotlarsky and M. Huysman, "Bridging Knowledge Boundaries in Cross- Functional Groups : The Role of a Transactive Memory System", International Conference on Information System, 2009.
- [64] B. Narteh, "Knowledge transfer in developed-developing country inter rm collaborations: a conceptual framework". Journal of Knowledge Management, Vol. 12, No. 1, 2008, pp. 78-91.
- [65] S. C. Currall and A. C. Inkpen, "A multilevel approach to trust in joint ventures", Journal of International Business Studies, Vol. 33, No.3, 2002, pp. 479-495.
- [66] E.W. Stein and V. Zwass, "Actualizing organizational memory with information systems", Information Systems Research, Vol. 6, No. 2, 1995, pp. 85-117.
- [67] D. Nevo and Y. Wand, "Organizational memory information systems: a transactive memory approach", Decision Support Systems, Vol. 39, No. 4, 2005, pp. 549 – 562.
- [68] D. M. Wegner, "A computer network model of human transactive memory", Social Cognition, 13, 1995, pp. 1-21.
- [69] M. Keith, H. Demirkan, and M. Goul, "Understanding Coordination in IT Project-Based Environments: An Examination of Team Cognition and Virtual Team Efficacy", Proceedings of the 42nd Hawaii International Conference on System Sciences, 2009, pp. 1-8.
- [70] K. Lewis, "Measuring transactive memory systems In the field: Scale development validation", Journal of Applied Psychology, Vol. 88, No. 4, 2003, pp. 587-604.
- [71] I. Oshri, J. Kotlarsky, and L. Willcocks, "Global software development: Exploring socialization and face-to-face meetings in distributed strategic projects", Journal of Strategic Information Systems, Vol. 16, No. 1, 2007, pp. 25-49.
- [72] J. Kotlarsky and I. Oshri, "Social ties, knowledge sharing and successful collaboration in globally distributed system development projects", European Journal of Information Systems, Vol. 14, 2005, pp. 37-48.
- [73] J. T., Karlsen, L., Hagman, and T. Pedersen, "Intra-project transfer of knowledge in information systems development firms", Journal of Systems and Information Technology, Vol. 13, No. 1, 2011, pp. 66-80.
- [74] Juhana Salim, Nurul Rafidza Muhammad Rashid, Yazrina Yahya, Abdul Razak Hamdan, et al., "HiKMAs: Cultural Behavioural and ontology based approach towards a Holistic Knowledge Management System Design", Communication of The IBIMA, Vol. 8, 2009, pp. 107-113.
- [75] J., Roberts, T., Analysis, and S. Management, "From know-how to show-how? Questioning the role of information and communication", Technology Analysis & Strategic Management, Vol. 12, No. 4, 2000, pp. 429-443.
- [76] A. Aurum, F. Daneshgar, and J. Ward. "Investigating Knowledge Management practices in software development organisations – An Australian experience", Information and Software Technology, 50, No. 6, 2008, pp. 511-533.
- [77] R. Parent, M. Roy, and D. St-jacques, "A systems-based dynamic knowledge transfer capacity model", Journal of Knowledge Management, 11, No. 6, 2007, pp. 81-93.
- [78] J. Mu, F. Tang, and D.L. MacLachlan, "Absorptive and disseminative capacity: Knowledge transfer in intra-organization networks", Expert Systems with Applications, Vol. 37, No. 1, 2010, pp. 31-38.

- [79] K.-ting, Zheng, T. C., Lin, and J. S. Hsu, "Understanding the Impact of Transactive Memory Systems on Project Team Performance: The Mediating Role of Knowledge Integration and Collective Mind", *Information Systems*, 2010, pp. 112-117.

Nor Aziati Abdul Hamid is PhD Candidate at Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. She received her Master's Degree in 2006 at the Universiti Teknologi Mara Malaysia. She works as Lecturer at Production and Operation Management Department, Universiti Tun Hussein Onn Malaysia. Her research interests include knowledge transfer, Information System Outsourcing, E-Business and organization studies. Nor Aziati Abdul Hamid is the corresponding author for this paper.

Juhana Salim is a professor at Information Science program, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. Her research interests include Knowledge Technology, Information Processing and Management.