# Exploring the Role of Transactive Memory System (TMS) for Knowledge Transfer processes in Malaysia E-government IT Outsourcing

Nor Aziati Abdul Hamid Department of Technology Management Faculty of Technology Management Universiti Tun Hussein Onn Malaysia

Batu Pahat, Malaysia aziati@uthm.edu.my

Abstract— Knowledge transfer has attracted much attention to researchers and practitioners in recent years since knowledge transfer has been considered as a critical determinant of an organization's capacity to confer sustainable competitive advantage. Despite extensive research on knowledge transfer issues, there is a dearth of research that has explicitly focused on the role of transactive memory in enabling intraorganizational knowledge transfer in information technology (IT) outsourcing context, particularly e-government IT outsourcing. Although the information systems literature has recently acknowledged the role of transactive memory plays in improving knowledge processes, most of the research is still in the basic concept of transactive memory which is emphasized more on the individual communication concept rather than integrating those concept with the existing organization memory system. Moreover, it is still at a conceptual level rather than practical action for a firm to address. Therefore, this paper attempts to fill this gap by examining the factors that have been cited as significant influences on the ability to transfer knowledge from the vendor to the client organizations in the context of e-government IT outsourcing, and examine the role of transactive memory system towards effective knowledge transfer process between organizations. Drawing on several theoretical streams, this paper will propose an integrated conceptual framework of inter-organizational knowledge transfer which further can be used for research enhancement.

Keywords — Knowledge Management; Knowledge Transfer; Organizational Learning; Transactive Memory System (TMS); Information Technology Outsourcing (ITO)

#### I. 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. system theory, organization theory. organizational learning, artificial intelligent and other more. Among those parent disciplines, organizational learning is the closets 'cousin' to KM "with KM and organizational learning being considered two sides of the coin" [1]. Transfer of knowledge is critical to organizational learning success. Tangible assets tend to depreciate in value when it is

Juhana Salim Department of Information Science Faculty of Technology and Information Science Universiti Kebangsaan Malaysia Bangi, Malaysia js@ftsm.ukm.my

utilized. However, knowledge grows when it is fully utilized and depreciates when 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) 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. Therefore, four ministries; Finance, Health, Works and Education have been selected to lead the definition and development of their knowledge bank. Though there was an initiative by the government, the success story of knowledge bank implementation reported by the scholars and how it can cooperated between each agencies is scarce. Furthermore, the framework focused more on the internal knowledge repositories among the public agencies without the absence of private agencies [2]. 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 bank that could support and facilitate transferring process during the partnership.

Recent research has suggested various organizational, human-related and IS-based mechanisms for improving knowledge transfer processes within and between organizations. Kotlarsky et al., [3] for example has introduced Transactive Memory System (TMS), an extended concept of Organizational Memory System (OMS) to facilitate the process of knowledge transfer across boundaries. Therefore in this paper, we discuss how knowledge transfer may be bridged by applying a TMS concept with existing factors to facilitate knowledge transfer processes during IT outsourcing project in Malaysia government. Relevant literature from prior research and suggested conceptual framework would be the presents in the next following sections.

# A. Knowledge Transfer and IT Outsourcing

Knowledge transfer have been defined by most scholars 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. KS primarily concerned with the individual's view while KT 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".

Knowledge resides in members (human components of organization), task and interrelationship, tools and technology (software and hardware) and network coordination (internal or external network coordination) [6]. Knowledge can be transferred through two mechanisms [9]; (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 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 [13]. 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.

During partnership, client and vendor can develop two forms of knowledge transfer in terms of a reciprocal learning [14]; 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 clear common vision and goals for partnership as well as a belief that their partners will not act opportunistically; this may be termed partnership quality [15]. 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, in Malaysia context very few attempts have been undertaken to research on knowledge transfer in IT outsourcing (ITO).

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 [16], Malaysian SME industries [17], aerospace industry [18], bank [19], telecommunication industry [20], higher education [21], to cite a few. There is only one work recently done by [22] 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.

# II. MALAYSIA E-GOVERNMENT IT OUTSOURCING INITIATIVES

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.

ITO, which is defined as the process of turning over part or all of an organization's IT functions to external service provider(s) that has the specific skill and services [23],[24] is done to acquire economic, technological, and strategic advantages. ITO in the Malaysia public sector has become an accepted management practice, and a large percentage of IT projects for E-government became outsourced. Usually egovernment ITO project will involve two or more vendors working together for one particular project. The relatively high complexity, high uncertainty, and high risk of large egovernment 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, webhosting 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 approach 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/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/maintain the whole ICT devices but the ownership of the device belongs to the agencies not the provider.

It shows that 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 [25], there are still some project that is not fully satisfied by the stakeholders or do not meet stated performance objectives [26]. egov4dev.org (2009) reported that egovernment 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 [27] which examined the importance of knowledge transfer towards vendor's development that can create added value to the organizations. Giannakis [27] 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 [28].

#### III. LITERATURE REVIEW

### A. Theoreticals Lens

From a strategic perspective, the knowledge held by the firm is framed as the bedrock source of competitive advantage with strategic importance to organizations. Shook et al., [29] have viewed ITO through multiple theoretical lenses. However, the most cited 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 [30] and [31], 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- adding 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. In this perspective, firms may establish sourcing relationships with leading resource and knowledge providers in order to gain access to knowledge and resources not currently possessed internally. Under such conditions, sourcing can be viewed as a boundary spanning mechanism through which firms can use sourcing relationships to gain access to resources critical to the firm's competitive advantage development or maintenance [32]. In such cases, firms establish a short-term relationship with an established sourcing partner with the intent of transferring knowledge, human capital, and other resources from the sourcing firm to the partner. Mechanisms emphasized in this strategy can range from the transferring of knowledge to help develop internal capabilities, to the hiring of management personnel from the sourcing firm to develop internal capabilities for the partner, to the outright acquisition of the sourcing firm to internalize capabilities previously existing externally. Thus, many researchers have placed these two theories as the theoretical lens to the KT model or their framework specifically for ITO environment [33], [34].

# B. Knowledge TransferModel

King et al.,[3] asserts that communications and information processing as a critical success factor in the effective knowledge organization. There are three models dominated research 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 [35] and [36] while the second is based from [37] model. The third one is based from [38] knowledge creation model. Within the communicationbased 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 [35] communication model initially consisted of simply a Sender, Recipient and Message. The receiver becomes the "recipient" or "user", since it is the subject who learns or acquires knowledge (not simply the message receiver), while the message becomes the "object", as it can be produced by complex knowledge. Scharmm's [39] later modified the model to include Media that is the channels used to communicate the message, mitigate its passage, and enhance its chances of completing a communicative act. Jacobson [36] improvised the basic model developed by Schramm's by considers six factors: Knowledge source, Message, Knowledge receiver, Channel, Feedback and Environment or Organizational context.

Subsequently, 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., [37] has postulated three components in the information processing model: encoding knowledge representations (i.e. forming 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). From [35] 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: externalisation (from implicit to explicit), combination (from explicit to explicit), socialization (from implicit to implicit) and internalization (from explicit to implicit). However, [40] opined that the best group information processing models should consist of communication based view, knowledge creation based and memory based system. With these three combination of different model, the knowledge transferring process that took place between an individual as the knowledge creator and subsequently the organization as the amplifier of knowledge can synthesize a shared memory system.

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], [51] or organization context [52], [53]. Inspite of that, current trends in knowledge transfer research have also comprised project nature [5], [34] factors in developing the model since most of the transferring process occurred during the project execution or alliances. Table I 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.

TABLE I. Knowledge Transfer Components

Components	Characteristics	Authors
Source	Disseminative Capacity Reliability Credibility	[5], [49]
Recipient	Absorptive Capacity Motivation	[46], [51]
Knowledge	Knowledge Ambiguity Stickiness Complexity Tacitness	[10], [51]
Organizational	Organizational Culture Personnel Movement Community of Practices Management Practices	[52] [53]
Communication	Codification Interpretation	[51] [54]
Relationship	Arduous Relationship Dyadic relation Contact frequency Social Similarity	[10] [6] [54]
Project Nature	Prior collaboration history Team size Project complexity Project phase	[5]

# C. Organizational Memory System and Knowledge Transfer Process: The role of Transactive Memory System

KT process comprises four activities; knowledge conversion, knowledge routing, knowledge dissemination and knowledge application [41]. 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 [42]. 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 [41]. This collective memory is often referred to as organizational memory (OM). To support effective management of organizational memory, [43] 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, [44] argued that the proposed OMIS architecture by [43] 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, [44] proposed the concept of transactive memory systems (TMS) being incorporated with OM.

Transactive memory is a system for encoding, storing, and retrieving information in groups [45]: it is a set of individual memory systems in combination with the communications that take place between individuals. Transactive memory system (TMS) was developed by Wegner and his colleagues. 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 & Wand [44] 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 [47] has 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 & Klobas [47] has divided organizational TMS into four main activities instead of three activities postulated by [45]. 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 by [47]. 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.

### IV. 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, clientrelated 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 [48]. Figure I illustrate the proposed conceptual framework for the study.

#### A. 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 the transmission of message from a vendor (as the sender) to the client (as the recipient) in which a recipient can absorb and often influences the behaviour of the recipient in certain way. Within this perspective, the message corresponds to the knowledge content that is being transferred. A sender corresponds to the knowledge source involved in transferring knowledge or the generalized knowledge resource. A recipient, commonly referred to as knowledge receiver, is the knowledge transfer 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 Researchers only take the items that empirically give 1. significant or positive impact towards knowledge transfer. The negative impact has been eliminated to ensure the high validity and reliability of each construct. Vendor characteristics encompass 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 organizational memory structure as proposed by [47].



Figure 1. A conceptual Framework of Knowledge Transfer in E-government IT Outsourcing

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 [34]. 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. Thus in this research, four control variables are included in the framework: prior collaboration history, team size, project complexity and project phase.

#### V. CONCLUSION

This conceptual paper proposed an integrative preliminary framework that links four groups of key domains namely; client-related characteristics, vendor-related characteristics, organizational memory context and project management factors while discussing the theories and models behind the proposed model. It is believed that the application of the framework may provide useful insights into ITO specifically for Malaysia e-government initiatives.

#### REFERENCES

- Hacket, B., "Beyond Knowledge Management: New Ways to work and Lear," *The Conference Board*, Research Report, 1262-00-RR, 2000.
- MAMPU, "Malaysia Public Agencies IT Outsourcing Guideline", 2006. Retrived at <u>http://www.mampu.gov.my/pdf/Garis-Panduan-IT-outsource.pdf</u>
- [3] Kotlarsky, J., Van Den Hoopp, B., & Huysman M., "The role of a transactive memory system in bridging knowledge boundaries". In: *Proceedings of the Organisational Learning, Knowledge and Capabilities (OLKC)*. Amsterdam, The Netherlands; 2009.
- [4] King, R.C., Xia, W., Quick, J. C. & Sethi, V., "Socialization and organizational outcomes of information technology professionals", *Journal of Career Development International*, vol. 10, no. 1, pp. 26-51, 2005.
- [5] Ko, D., L. Kirsch, & W. King., "Antecedents of knowledge transfer from consultants to clients in enterprise system implementation", *MIS Quarterly*, vol. 29, no. 1, pp.59–85, 2005.
- [6] Argote, Linda & Ingram P., "Knowledge Transfer in Organizations: Learning from the Experience of Others", Organizational Behavior and Human Decision Processes, vol. 82, no.1, pp.1-8, 2000.
- [7] Schwartz, D.G., "Integrating knowledge transfer and computermediated communication: categorizing barriers and possible responses", *Knowledge Management*, (August), pp.249-259, 2007.
- [8] Kumar J. A. & Ganesh L. S., "Research on knowledge transfer in organizations: A morphology". *Journal of Knowledge Management*, vol. 13, Issues 4, pp.161-174, 2009.
- [9] Ambos, T.C. & Ambos B., "The impact of distance on knowledge transfer effectiveness in multinational corporations". *Journal of International Management*, vol. 15, no. 1, pp.1-14, 2009.
- [10] Szulanski, G., "The process of knowledge transfer: a diachronic analysis of stickiness". Organizational Behaviour and Human Decision Processes, vol. 82, no.1, pp:9-27, 2000.
- [11] Mowery D.C., Oxley JE, Silverman BS., "Strategic Alliances and Interfirm Knowledge Transfer", *Knowledge Creation Diffusion Utilization*, vol. 17, pp. 77-91, 1996.
- [12] Al Ghassani, A.M., "Improving the Structural Design Process: a Knowledge Management Approach", PhD thesis, Loughborough University, 2003.
- [13] Rottman J.W., "Successful knowledge transfer within offshore supplier networks: A case study exploring social capital in strategic

alliances", Journal of Information Technology, vol. 23, no. 1, pp.31-43, 2008.

- [14] Connell, J. & Voola R, "Strategic alliances & knowledge sharing: Synergies or silos?', Journal of Knowledge Management, vol.11, no. 3, pp. 52-66, 2007.
- [15] Lee, Jae-Nam., "The impact of knowledge sharing, organizational capability and partnership quality on IS outsourcing success", *Information and Management*, vol. 38, pp. 323-335, 2001.
- [16] Syed-Ikhsan & Fytton Rowland., "Benchmarking knowledge management in a public organisation in Malaysia", *Benchmarking: An International Journal*, vol. 11, Issue 3, pp. 238 – 266, 2004.
- [17] Wong, K. W., "An exploratory study on knowledge management adoption in the Malaysian industry", *International Journal of Business Information System*, vol. 3, no. 3, pp. 272-283, 2008.
- [18] Tat, L. W., & Hase, S., "Knowledge Management in The Malaysian Aerospace Industry", *Journal of Knowledge Management*, vol. 11, Issue 1, pp. 143-151, 2007.
- [19] Ali, H. M. & Ahmad, N. H., "Knowledge Management in Malaysian Banks: A New Paradigm", *Journal of Knowledge Management Practice*, vol. 7, No. 3, 2006.
- [20] Wei, C. C., Choy, C. S. & Yew, W. K., "Is the Malaysian telecommunication industry ready for knowledge management implementation?", *Journal of Knowledge Management*, vol. 13, Issue 1, pp.69 – 87, 2009.
- [21] Sharimllah Devi, R., Chong, S.C. & Lin, B., "Organizational culture and KM processes from the perspective of institution of higher learning", *International Journal of Management in Education*, vol. 1, no. 1/2, pp. 57-79, 2007.
- [22] Mohamed, A., Arshad, N. H. & Abdullah, N. A., "Influencing factors of knowledge transfer in IT outsourcing", Proceedings of the 10th WSEAS international conference on Mathematics and computers in business and economics, pp. 165-170, 2009.
- [23] Kaliannan, M., Awang, H. & Raman, M., "Technology adoption in the public sector: an exploratory study of e-government in Malaysia", Proceedings of the 1st international conference on Theory and practice of electronic governance, pp. 221-224, 2007.
- [24] Loh, L. & Venkatraman, N., "Determinants of information technology outsourcing: a cross sectional analysis", *Journal of Management Information Systems*, vol. 9, Issues 1, pp. 7-24, 1992.
- [25] Moon, J., Jung, G., Chung, M. & Choe, Y. C., "IT outsourcing for Egovernment: Lessons from IT outsourcing projects initiated by agricultural organizations of the Korean government", 40th Annual Hawaii International Conference on System Sciences (HICSS'07), pp. 104a.
- [26] Nakatsu, R.T. & Iacovou, C. L., "A comparative study of important risk factors involved in offshore and domestic outsourcing of software development projects: A two-panel Delphi study", *Information & Management*, vol. 46, pp.57-68, 2009.
- [27] Giannakis, M., "Facilitating learning and knowledge transfer through supplier development", *Supply Chain Management: An International Journal*, vol. 13, no. 1, pp. 62-72, 2004.
- [28] Chen, Y. & Gant, J., "Transforming local e-government services: the use of application service providers", *Government Information Quarterly*, vol. 18, pp. 343-353, 2001.
- [29] Shook, C.L., Adams, G.L. & Jr DJ. "Towards a theoretical toolbox for strategic sourcing". *International Journal*, vol. 1, pp. 3-10, 2009.
- [30] Barney, J., "Firm resources and sustained competitive advantage", *Journal of Management*, vol. 17, no. 1, pp:99-120, 1991.
- [31] Wernerfelt, B., "A resource-based view of the firm", Strategic Management Journal, vol. 5, pp. 171-80, 1984.
- [32] Combs, J. & Crook, T., "Sources and consequences of bargaining power in supply chains". *Journal of Operations Management*, vol. 25, pp. 546-55.
- [33] Blumenberg, S., Wagner, H. & Beimborn, D., "Knowledge transfer processes in IT outsourcing relationships and their impact on shared

knowledge and outsourcing performance". International Journal of Information Management, vol. 29, pp.342-352, 2009.

- [34] Joshi, K.D., Sarker, S. & Sarker, S., "Knowledge transfer within information systems development teams: examining the role of knowledge source attributes". *Decision Support Systems*, vol. 43, pp.322-334, 2007.
- [35] Schramm, W., "The Process and Effect of Mass Communication, Urbana": University of Illinois Press, 1954.
- [36] Jacobson, C.M. "Knowledge sharing between individuals", in Schwartz, D.G. (Eds), *Encyclopedia of Knowledge Management*, Idea Group Reference, Hershey, PA, pp.507-14, 2006.
- [37] Hinsz, V.B., Tindale, R.S. and Vollrath, D.A., "The emerging conceptualization of groups as information processors", *Psychological Bulletin*, vol. 121, pp. 43-64, 1997.
- [38] Nonaka, I., "A Dynamic Theory of Organizational Knowledge Creation". Organization science, vol. 5, Issues 1, pp. 14-37, 1994.
- [39] Schramm, W., "Mass Communication: a Book of Readings, Urbana": University of Illinois Press, 1960.
- [40] Curseu, P. P.' Schalk, R.; Wessel I., "How do virtual teams process information? A literature review and implications for management", *Journal of Managerial Psychology*, vol. 23, Issue 6, pp. 628-652, 2007.
- [41] Narteh B., "Knowledge transfer in developed-developing country inter rm collaborations: a conceptual framework". *Journal of Knowledge Management*, vol. 12, no. 1, pp.78-91, 2008.
- [42] Inkpen AC., "Learning through joint ventures: a framework of knowledge acquisition". *Journal of Management Studies*, vol. 37, 2000.
- [43] Stein E.W., Zwass V.. "Actualizing organizational memory with information systems". *Information Systems Research*, vol. 6, no. 2, pp. 85-117, 1995.
- [44] Nevo D, Wand Y., "Organizational memory information systems: a transactive memory approach". *Decision Support Systems*, vol. 39, pp. 549 – 562, 2005.
- [45] Wegner, D. M., "Transactive memory: a contemporary analysis of the group mind", in: B. Mullen, G.R. Goethals (Eds.), Theories of group behaviour, SpringerVerlag, NewYork, pp. 185–208, 1987.
- [46] Anand, V., Manz, C.C., Glick, W.H., "An organizational memory approach to information management", Academy of Management Review, pp. 90–111, 1998.
- [47] Jackson P, Klobas J. Transactive memory systems in organizations: Implications for knowledge directories. *Decision Support Systems*, vol. 44, pp. 2409-424, 2008.
- [48] Keith, M., Demirkan, H., and Goul, M., "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.
- [49] Xu Q., Ma, Q., "Determinants of ERP Implementation Knowledge Transfer". Information & Management, vol. 45, pp. 528-539, 2008.
- [50] Albino V, Garavelli AC, Gorgoglione M., "Organization and technology in knowledge transfer", *Benchmarking: an International Journal*, vol.11, no. 6, pp.584-600, 2004.
- [51] Easterby-smith, M., Lyles, M.A. & Tsang EW. Inter-Organizational Knowledge Transfer: Current Themes and Future Prospects. *Journal* of Management Studies. 2008;(June).
- [52] Wilkesmann U, Fischer H, Wilkesmann M. Cultural characteristics of knowledge transfer. *Journal of Knowledge Management*, vol. 13, Issues 6, pp.464-477, 2009.
- [53] Gregory, R., Beck, R., Prifling M. Breaching the Knowledge Transfer Blockade in IT Offshore Outsourcing Projects – A Case from the Financial Services Industry. In: *Proceedings of the 42nd Hawaii International Conference on System Sciences*. IEEE, pp. 1-10,2009.
- [54] Uzzi, B & Lancaster, R., "The role of relationship in inter-firm knowledge transfer and learning the case of corporate debt markets", Management Science, vol. 49, no. 4, pp. 383-399, 2003.