KESAN FAKTOR KLIEN, PEMBEKAL DAN SISTEM MEMORI TRANSAKTIF (TMS) TERHADAPPEMINDAHAN PENGETAHUN DALAM PENYUMMBERAN LUAR TEKNOLOGI MAKLUMAT E-KERAJAAN: KAJIAN KES AGENSI AWAM MALAYSIA

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TESIS YANG DIKEMUKAKAN UNTUK MEMENUHI SEBAHAGIAN DARIPADA SYARAT MEMPEROLEH IJAZAH DOKTOR FALSAFAH

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ABSTRACT

Knowledge transfer is the process whereby the reciever unit identifies and learns specific knowledge resides in the source unit, and applies the knowledge in another context. This study explores the impact of client, vendor and Transactive Memory System (TMS) in facilitating knowledge transfer between IT outsourcing project teams. Recent research in information system has highlighted the importance of transactive memory in improving the knowledge process's ability and subsequently team performance. A Transactive Memory System is a group-level concept, referring to the aspect of the knowledge that a person has about what another person knows. However, there is limited research reported on the contribution of TMS for knowledge transfer in IT outsourcing particularly among Malaysian Public Agencies. To address this gap, the ultimate aim of this research is to contribute towards a viable knowledge transfer model and suggest the implementation guidelines for TMS to facilitate the knowledge transfer process. To achieve this purpose, the study incorporates three underlying theories; knowledge-based view, organisational learning theory and social exchange theory for the ideation of concepts. In response to the research aim, six research objectives with 16 hypotheses have been outlined to be tested. The data were collected via a cross-sectional self administered survey, which yielded 195 usable questionnaires from IT personnel at three e-government lead agencies located in Putrajaya and Cyberjaya. The measurement opted was based on subjective perception instead of objective measures as the respondents are doubt to sufficiently quantify the volume of transferred knowledge. This study employed various types of multivariate analysis and Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyse the collected data. The result of the goodness of fit index satisfies the recommended value while 12 hypotheses were supported. Hence, the developed model is considered acceptable. The validation results revealed that the entire model fit is appropriate and indicated the stability of theory used in building a model. Additionally, the findings showed that knowledge transfer in IT outsourcing is significantly affected by three sets of factors; the client factor, vendor factor and TMS factor. Specifically, the results depicted that credibility and disseminative capacity of the vendor's are crucial in affecting knowledge transfer in IT outsourcing. The research confirmed that TMS routines do exist among project members with the referral and allocation routines yielding the most significant routines that affect knowledge transfer. In addition, the research proved that knowledge transfer has a significant effect towards IT outsourcing project success. The present research will provide some useful insights not only for IT project managers to better manage the transferred knowledge; however, to effectively develop the IT outsourcing team's TMS as the more value this TMS has to prevent knowledge or skill loss. Additionally, the study contributes to theory development by introducing a new scale measurement for TMS and knowledge transfer constructs.

ABSTRAK

Pemindahan pengetahuan adalah proses di mana unit penerima mengenal pasti dan belajar pengetahuan khusus yang terdapat di unit sumber serta menggunakan pengetahuan tersebut dalam konteks yang lain. Kajian ini meninjau kesan faktor pelanggan, vendor dan Sistem Memori Transaktif (TMS) dalam mempermudahkan pemindahan pengetahuan antara ahli kumpulan projek penyumberan luar IT. Kajian terkini dalam bidang sistem maklumat telah menekankan kepentingan memori transaktif dalam meningkatkan keupayaan proses pengetahuan dan seterusnya prestasi kumpulan. TMS merupakan konsep di peringkat kumpulan yang merujuk kepada sistem perkongsian bersama merangkumi aspek pengkodan, penyimpanan dan capaian. Walau bagaimanapun, penyelidikan yang melaporkan sumbangan TMS bagi pemindahan pengetahuan dalam penyumberan luar IT terutamanya dari kalangan agensi-agensi awam Malaysia masih lagi terhad. Bagi memenuhi jurang ini, matlamat utama kajian ini adalah menyumbang ke arah model pemindahan pengetahuan yang boleh digunapakai serta mencadangkan garis panduan pelaksanaan TMS bagi mempermudahkan proses pemindahan pengetahuan. Bagi mencapai tujuan ini, kajian ini menggabungkan tiga teori dasar iaitu pandangan berasaskan pengetahuan, teori pembelajaran organisasi dan teori pertukaran sosial bagi pembinaan kerangka konsep. Sebagai tindak balas kepada matlamat penyelidikan, enam objektif penyelidikan dan 16 hipotesis telah digariskan untuk diuji. Data telah dikumpulkan melalui satu tinjauan keratan rentas ditadbir sendiri yang menghasilkan 195 soal selidik yang boleh digunapakai daripada personel IT di tiga buah agensi pelaksana utama e-kerajaan yang terletak di Putrajaya dan Cyberjaya. Pemilihan pengukuran adalah berdasarkan persepsi subjektif dan bukannya objektif kerana responden kurang pasti akan jumlah pengetahuan yang telah dipindahkan. Kajian ini menggunakan pelbagai jenis analisis multivariat dan Permodelan Persamaan Berstruktur Kuasa Dua Separa Terkecil (PLS-SEM) bagi menganalisa data yang terkumpul. Hasil analisis menunjukan kesesuaian data terhadap model yang dibina dengan memenuhi nilai yang disyorkan manakala 12 hipotesis telah disokong. Oleh itu, model yang dibangunkan dianggap boleh diterima. Keputusan penentusahan mendedahkan bahawa seluruh model adalah sesuai dan menunjukkan kestabilan teori yang digunakan dalam membina model. Selain itu, dapatan kajian menunjukkan bahawa pemindahan pengetahuan dalam penyumberan luar IT dipengaruhi oleh tiga set faktor iaitu faktof klien, faktor vendor dan faktor TMS. Secara khususnya, keputusan menggambarkan bahawa kredibiliti dan kapasiti menyebarkan pengetahuan di kalangan vendor sangat mempengaruhi pemindahan pengetahuan dalam penyumberan luar IT. Kajian turut mengesahkan bahawa rutin TMS sememangnya wujud di kalangan ahli-ahli projek dengan rutin rujukan dan agihan adalah rutin terpenting yang mempengaruhi pemindahan pengetahuan. Di samping itu, kajian membuktikan bahawa pemindahan pengetahuan mempunyai kesan ketara ke arah kejayaan projek penyumberan luar IT. Penyelidikan ini bukan sahaja dapat menyalurkan maklumat yang berguna kepada pengurus projek IT bagi menguruskan pengetahuan yang dipindahkan dengan lebih baik, namun turut dapat membangunkan TMS pasukan penyumberan luar IT secara berkesan kerana nilai tambah TMS ini dapat mengelakkan kehilangan pengetahuan atau kemahiran. Selain itu, kajian ini turut menyumbang kepada pembangunan teori dengan memperkenalkan skala pengukuran baru bagi konstruk TMS dan pemindahan pengetahuan.

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CHAPTER I

INTRODUCTION

1.1 INTRODUCTION

In today's highly competitive business environment, knowledge transfer is widely recognised for the better value creation that can improve organisational performance, coordination and collaboration. Some researchers use the term "technology transfer" and "knowledge transfer" interchangeably. However, based on Gopalakrishnan and Santoro (2004) critical reviews on knowledge transfer and technology transfer terms, they asserted that both knowledge transfer and technology transfer serve different purposes. Knowledge transfer entails a broader scope, more inclusive constructs that are directed more toward understanding the "whys" for change. This is because knowledge includes most elements of human judgment, exceptions, and additionally, less articulated and more tacit than technology. In contrast, Warookun et al. (2005) and Gopalakrishnan & Santoro (2004) defined technology transfer as the shared responsibility between the source and destination for ensuring the technology is accepted and understood by someone with the knowledge and resources to apply or use the technology. This definition implies technology transfer as a narrower and more targeted construct that usually embodies certain tools or technologies for transforming the environment. In such case, technology transfer incorporated more about knowing how to use and maintain the transferred technology. Most organizations are actually practicing knowledge transfer using mechanisms like staff training, observation of experts, routines, meetings, standard operating procedures, manuals and databases (Slaughter & Kirsch 2006) where most of the transferring knowledge process was an implication of strategic alliances, joint ventures, mergers and acquisitions (Rottman & Lacity 2008).

One of the strategic alliances practices in Malaysia is through IT outsourcing. Hence, IT outsourcing (ITO) in Malaysia will be the context of the study that gain much interest especially with the current initiatives is promoted by the Malaysian government.

Today, IT outsourcing is a common practice at any government administration. As stated by Al-Salti and Hackney (2011), most public agencies engaged external vendors as a means of transferring and leveraging the vendors' technical experts, business knowledge and benefiting complementary skills. In the context of IT outsourcing, the importance of knowledge transfer has become apparent in the recent literature (Blumenberg et al. 2009; Karlsen et al. 2011; William 2011). Knowledge transfer is important in IT outsourcing since outsourced projects have been recognised as a knowledge-intensive endeavours with a diversity of knowledge background, skills and often involve social interaction among the team of experts. The transfer of knowledge in IT outsourcing is twofold; one side, vendors can transfer their IT special knowledge to clients, which helps clients to improve their IT function and gain competitive advantage. The other side, clients also transfer their business knowledge to vendors, which will improve vendor's capability of understanding and implementing the projects. This scenario shows both client and vendor must reach capability fit whereby knowledge and skill is the key measures. Despite the recognised benefits of knowledge transfer in IT outsourcing, prior studies have found that inter-organisational knowledge transfer remains challenging and complex in nature (Pardo et al. 2006; Easterby-smith et al. 2008)

Having argued so, it appears that public sectors especially in developing countries like Malaysia, have not received much attention in the research literature covering knowledge transfer especially in IT outsourcing. Most of the Malaysian reported studies in the KM mainstream literature concentrate on the general KM implementation or readiness at public agencies (Syed-Ikhsan & Rowland 2004; Tehraninasr & Murali 2009; Sandhu et al. 2011; Erwee et al. 2012), Malaysian SME industries (Wong & Aspinwall 2004; Wei et al. 2011), aerospace industry (Tat & Hase 2007), bank (Ali & Ahmad 2006), telecommunication industry (Wei et al. 2009; Wei et al. 2011), higher education (Juhana et al. 2009; Sharimllah et al. 2009), oil and gas

company (Juhana 2006; Mohd Hassan et al. 2006), to cite a few. Predominantly, Malaysian researcher discussed the impact of organisational factor, human and technology factor towards knowledge sharing in public agencies (Rahman 2011; Sandhu et al. 2011; Zawiyah et al. 2012). Based from the review of previous research undertaken in Malaysian context, there are three published work done by Azlinah et al. (2009), Kalsom et al. (2012) and Salfarina et al. (2012) focusing on knowledge transfer success factors in Malaysia setting. However, those researches served different context, objective and outcome. In conclusion, the study of knowledge transfer in Malaysian government context is still lacking particularly studies that highlight the importance of developing internal knowledge based for government. Thus, this study attempts to address this gap and significantly give an insight and better understanding of the knowledge transfer processes in IT outsourcing, particularly in Malaysia public sector environment.

1.2   RESEARCH BACKGROUND

Over the last decade, the outsourcing industries have expanded significantly across the globe. Based on the speech given by Outsourcing Malaysia Chairman, the Malaysian outsourcing industry has a relatively smaller share with revenues of RM1.1 billion for the year 2009. However, the revenues are expected to reach RM5.9 billion by 2013. This is due to the fact that the Malaysian government has taken seriously the IT specialist gap issues. Through the outsourcing approach, the expert's knowledge can be transferred either directly or indirectly. The overall ITO industry in Malaysia contributes about 60 percent of the country's outsourcing revenue. Given the huge potential growth and rich reported economic facts in the supply of outsourcing, Malaysia would benefit greatly if they could establish themselves as major global outsourcing hubs. Such endeavour could increase the local employment rate, transfer of new technology and expertise as well as generate a new source of income for the country. In the context of Malaysia, five major players in IT outsourcing are the banking sector (e.g. CIMB and Maybank), airline (MAS), manufacturing, healthcare, and public sectors. IT outsourcing in the Malaysia public sector has become an accepted management practice, and a large percentage of IT projects for E-government became outsourced. IT outsourcing has

been identified as one of the main ways to address some demanding challenges faced by government. Nowadays, Malaysia government is promoting the transformation of servicing citizen needs through the introduction of the Government Transformation Programme (GTP) and Economic Transformation Programme (ETP). Thus, there is an urged for the government and public agencies to shift to more interactive service delivery which are citizen-centred and based on networks and partnership between public, private and non-government organisation (NGO). As part of the plan, the Malaysian government has launched "connected programme" in 2007 to boost information sharing, integration and interoperability among public agencies. The engagement with third party vendors by government can help meet increasing e-government service demands of the citizen and business alike, besides to achieve zero face-to-face interaction for citizen as more services move online. However, these activities require the creation and utilisation of new knowledge. Therefore, rapid and effective knowledge transfer can affect IT outsourcing project success and ultimately the government can become more responsive to transform generally (Rashman et al. 2009).

Basically, the government makes the decision to outsource e-government projects because of various reasons. The shortage of IT experts and the difficulty of attracting and retaining the right IT talent ranked as the number one reason that fuel the Malaysian government decision to outsource. Financial constraint is not the main motivation of Malaysian public agencies to outsource compared to private sectors as public sector managers adopt a different mindset to outsourcing (Cox et al. 2012). Currently, e-government IT outsourcing activities in Malaysia involved data entry, ICT hardware maintenance, network management service, web-hosting management and development and lastly application system maintenance (MAMPU 2006). Usually, all these services are the turn-key projects whereby the tenders are awarded to local native vendors. However, with reference to Malaysia government IT outsourcing practices, the government will award the contract to registered local main vendors. The main vendor where acts like middle man that will directly negotiate with the manufacturer or international service providers. Since the awarded projects are relatively complex, high uncertainty, high risk of large e-government service projects and economic reasons, partnership approach is most favourable rather than monetary

relationship (Chen & Perry 2003). Currently, the Malaysian government is practicing three types of IT outsourcing approach for e-government application namely (MAMPU 2006); (1) BOT (*Build, Operate, Transfer*), (2) BOO (*Build, Operate, Own*) and (3) Operation and Maintenance Contract Services. For BOT approach, the public agencies contracted third party to build a shared service and operate the service based on a fixed period. Once the contract terminated, the vendor needs to hand over the application/services to the agencies that initiates the project at no cost with the expectation that the application is fully operating. Example applications for BOT approach that have been implemented are e-procurement (e-perolehan) owned by the Ministry of Finance (MOF) and The Electronic Budget Planning and Control System (e-SPKB) owned by the National Accountant Department (ANM). E-Perolehan for example, is a US$71 million secure electronic marketplace and e-procurement service that enables the government of Malaysia to purchase goods and services over the Internet. This project is financed through a *build-operate-transfer* (BOT) scheme involving Commerce Dot Com Sdn. Bhd., an electronic commerce joint venture company between Puncak Semangat Sdn. Bhd. and NTT Data Corporation. Originally, this project is contracted for eight years; however, it has been extended for an extra five years until April 2012. In contrast with BOO outsourcing approach, the vendor will provide and manage the ICT service without the need to return the services or applications back to the agencies. The ownership of the services is still under vendor supervision. An example of BOO project is *MySMS* services. The *MySMS* application is a mobile government initiative whereby this initiative will provide unstructured supplementary service data to government besides multimedia messaging service (MMS) and short messaging service (SMS). This project was initiated and monitored by Malaysian Administrative Modernization and Management Planning Unit (MAMPU). Malaysia government has appointed DAPAT Vista Sdn. Bhd. as service providers for the project since 2008 and the government has extended the contract period effective on August 2011 until August 2015. The contracted project is worth RM 2.3 million. Until now, this service has been used by 179 agencies with more than 1.4 million users. The third IT outsourcing approach is operation and maintenance (O&M) contract basis service. For this approach, the owner agency will award a contract to the vendor for hardware and software

maintenance, network or security management. However, the ownership of the device belongs to the agencies not the provider.

Arguably, the above descriptions show that the Malaysian government massively outsourced many e-government applications. However, researches focused on knowledge transfer process happen in the outsourcing projects particularly from Malaysia context is limited and fragmented. Capturing and transferring knowledge gained to the client during contract completion are critical issues in sourcing. The extent of outsourcing relationships and interaction between a client and an IT vendor will likely determine the extent of knowledge transfer between the parties (Williams 2011; Oshri et al. 2008). In reality, Malaysia government is still struggling to manage and control their outsourced project as some project is not fully utilise and yet did not achieve the main objective. This argument is also supported by Hirschheim, Heinzl, & Dibbern (2009). Hirschheim et al. (2009) reported that more than half of IT outsourcing relationships worldwide fail within five years, and many clients state that outsourcing vendors misunderstand the scope, objectives and requirements that of them. The government-private relationship through IT outsourcing makes the knowledge transferring process more problematic due to differences in the development and implementation of IT across sectors. Furthermore, organization in general fear the possibility of de-capitalization of their organisational knowledge during the transfer of their key information or resources to the third party (Gonzalez, Llopis & Gasco 2013). Similarly, the vendors are afraid that they might not totally understand their client's business processes that ultimately result in an ineffective workflow between both parties.

In this regard, the effective knowledge transfer might help the organisation to do so. IT infrastructures and processes are often tightly linked to the business operations; hence, difficult to transfer to an independent vendor without an intense and iterative process of knowledge transfer. Previous researchers generally focused on *intra*-organisational KM processes of IT outsourcing (Gottschalk, & Solli-Sæther 2005), factors or antecedents of IT/IS outsourcing relationship (e.g. Lee et al. 2008; Lee et al. 2009). Yet, only a few studies have actually focused on the dimensions of knowledge transfer that may be impeding the successful transfer of knowledge

between the clients and the vendors (Joshi, Sarker, & Sarker 2007). Therefore, effort should be taken to conduct empirical or in-depth research on identifying the factors that can contribute to the knowledge transfer in IT outsourcing with the aim of not only to ease some of the problem; instead, to investigate an ever growing question in IT outsourcing scenarios such as the loss of critical technical capabilities and skills at the client organisations and the ramifications of such loss. This question is pertinent to relationships of all degrees of outsourcing approach from BOT to operation and maintenance approach.

1.3 PROBLEM STATEMENT

Despite the reports on e-government achievement has shown the increment rating for Malaysian e-government initiative, yet, there are still some projects that failed. For instance, Abdul-Aziz and Ali (2004) reported that in general, outsourcing quality of Malaysia's public works department was found unsatisfactory and they further revealed the incompetence of vendors as the main issue. Additionally, MAMPU (2008) reported that the e-government outsourced projects could not be considered as successful projects because the projects did not achieve the desired objectives. This premise is supported by a recent unpublished thesis done by Norshita (2012) who claimed that out of six e-government applications; only 40% of them are considered successful. The failure of the e-government project is not merely happening here in Malaysia, but all over the developing countries. Failure of e-government projects among public agencies have been reported in many literatures. For example, Heeks (2003) reported that failure rates of e-Government projects in developing countries are estimated to be as high as 85%. Out of 85% of the failure rate, 35% being classified as total failures, and 50% as partial failures. Only 15% can be fully seen as successful. The same case was reported in ZDNet U.K (2007) where 70% of UK e-government projects failed. Failure cases seem to be the norm at all governmental levels (Heeks 2008).

Many IT outsourcing projects for E-government failed even though success factors for IT outsourcing were rigorously considered based on principles and findings from previous research (Rose & Grant 2010). Most e-government project

failed because there is no lesson learnt since knowledge about the failure was not captured, transferred or applied. As a result, the government repeated the same mistakes. In fact, the same situation occurred in Malaysian public agencies. This claimed is supported by preliminary interview findings with three top level executives from the selected agencies. Often, problem faced by the Malaysian government during the IT outsourcing projects are loss of key technical skills, data security and over-dependence on the vendor to execute the project. Lack of technical skills and project governance knowledge influence the internal staff capacity to monitor and control the project. The three interviewees considered the retention of key technical skills vital to manage and evaluate the outsourcing agreement, to focus on strategy and to develop new ideas. Besides, the interviewees claimed the project team members have minimal knowledge on the contract contents and legislation issues. IT outsourcing is suppose to impose some of the innovation capabilities issues in government by learning from the experts. From the knowledge transferring and learning process, the government can reduce their dependence on vendor or service provider and allows them to recommence IT in-house at the end of the contract or in the event of failure (Cox et al. 2012). Similarly, these issues have been mentioned by Stanforth (2010) and Heeks (2002). According to them, the root of the problem relies in the gap between the professional knowledge and practice of systems development and the actual conditions of government practices. A poor project reporting structures combined with ineffective knowledge transfer during project execution with the vendor has significant impact on the overall project success (Joshi et al. 2004; Ko et al. 2005; Willcocks et al. 2004). This situation will indirectly cause the government to rely heavily on the vendors in ensuring the success of the project. Nonetheless, the government should be aware that vendors also have limited knowledge about the clients, especially for newly appointed vendors. Chen and Perry (2003) for example have criticised the incompetent vendors in IT project and relate the situation with the limited understanding of the client's business process. These issues demonstrate the importance of properly conducted knowledge transfer during IT outsourcing projects. Giannakis (2004) for instance asserted that the failure of many knowledge transfer initiatives revealed a twofold problem; (i) difficulty in the generation and transformation of knowledge into organisational action and (ii) difficulty in the transfer of knowledge to partners. In

addition, the acquired application may not be customised enough to effectively streamline or transform the business process and subsequently deliver the expected solutions.

The partnership in IT outsourcing often require significant information and knowledge exchange between the vendor and the client. Vendor possesses much specific technical knowledge while client possesses business knowledge. This may result in knowledge asymmetry and knowledge barriers because these two types of knowledge have different characters and different knowledge transfer mechanisms. Knowledge transfer in outsourcing may overcome two main issues; expectation and termination failures (Devos et al. 2008). Expectation failures occur when there is an unsatisfactory development performance, such as organisation fails to produce a workable application or to deliver within the budget constraints of time and costs. In fact, this problem has been identified as the most prominent problem that had hampered Malaysia public agencies (McPhesrson & Rahmah 2004). Meanwhile, termination failure is early contract termination because of inability of the vendor to perform as required and agreed. Organisation often realise the volume and the value of the knowledge they received from the various outsourcing partnership. Hence, organisation must identify knowledge that need to be transferred in order to retain the knowledge. Some of the example of knowledge that needs to be transferred are knowledge about client's environment, requirements and quality expectations, vendor skills and capabilities, and lastly operative processes (Willcocks et al. 2004). In terms of operational processes, knowledge that needs to be transferred is the knowledge about tasks, roles, and responsibilities of the order-delivery process as well as the processes of handling special cases and errors.

The difficulty of knowledge transfer in IT outsourcing relationship is also linked to the types of knowledge which needs to be transferred and the lack of communication competency among the IT teams or their business partners (Carmel, Dedrick, & Kraemer 2009). This situation may arise due to the different approaches needed for both client and vendor. The client is observably tacit in its approach to knowledge acquisition and application while the vendor is extensively explicit in its orientation to knowledge acquisition, use and transfer. Therefore, effective

knowledge transfer will facilitate the conversion process of tacit knowledge to explicit knowledge and vice versa and this will eventually influence the learning process and IT outsourcing performance. Another issue of successful knowledge transfer is an organisation's ability to learn or acquire the needed knowledge from the suppliers (Lee 2001). Literature that relates the importance of organisational learning with knowledge transfer has grown exponentially over the past 15 years (Rashman et al. 2009; Kalsom et al. 2012). However, there are some important gaps in the theory of organisational learning for knowledge transfer and its impact on the success of an IT project. First, it is striking that there is little research on learning and knowledge transfer in the public sectors (Rashman et al. 2009; Kennedy & Burford, 2013). Secondly, there is the lack of organisational learning theory incorporated in knowledge transfer studies among Malaysian researchers especially in the context of ITO. A review of knowledge management papers, specifically research articles regarding knowledge transfer in Malaysia have shown that only the research done by Kalsom et al. (2012) have incorporated organisational learning theory. However, the research was conducted only on a single public sector accounting organisation from the perspective of one group of professional intellects. Additionally, the research focuses on the impact of training on knowledge transfer performance in general.

Another study in the area of knowledge transfer from Malaysian setting was done by Salfarina et al. (2012). However, Salfarina et al. (2012) research focuses on the utilisation of the transferred knowledge among IT technical experts from various software development companies. And still, the study has not explained the importance of learning in knowledge utilisation and transfer. Besides, the background of the study is the private sector. Lack of knowledge transfer study conducted by government agencies in Malaysia, has been the main motivation to undertake this study. There are important reasons for considering learning and knowledge transfer in public service organisations. First, many government employees are hampered by resistance to share and transfer knowledge attitudes (Norizzati et al. 2009; Sandhu et al. 2011) because of the knowledge hoarding issues (Connelly et al. 2012) and lack of rewards or recognition system initiated by the agencies (Juhana 2006; Sandhu et al. 2011). Therefore, knowledge management initiatives in Malaysia are found to be at

minimum level (Suzana & Kasim 2010) although a variety of methods and strategies have been undertaken by the government. Second, in the recent decade Malaysian government is actively promoting the transformation agenda of the government in responding to the challenges of liberalisation as well as to improve service delivery to the citizen. In order to achieve the national agenda, public agencies need to be more innovative and creative. As also stressed by Sandhu et al. (2011), public agencies need to have knowledge about know-what, know-who, know-when, know-if and know-where. Apparently, to become a successful government just from the basis of know-how is not an easy task. Therefore, one of the ways to enhance innovation among public servants is through knowledge transfer and organisational learning because the entire set of knowledge will never be available within one individual. Transfer of knowledge is one of the elements of innovation where the acquired knowledge can be adjusted and applied to the current situation.

Above all, in most IT outsourcing cases, the vendor and client is located in dispersed environment that further complicates the learning and communication process. To overcome the challenges, vendor and client can collaborate through information and communication technologies (ICTs), and follow the face to face meeting schedule frequently. Nonetheless, over the past decade, studies have demonstrated repeatedly that, despite advances in technologies, ICTs does not prevent breakdowns in the transfer of knowledge between both parties (Cramton 2001; Mohd Hassan et al. 2006). While ICTs' are critical for knowledge-transfer processes in distributed teams, a neighbouring stream of studies within the information system (IS) field has considered human-related factors, such as trust (Levin et al. 2004; Li 2005) and interpersonal or network ties (Reagans & Mcevily 2003; Inkpen & Tsang 2005), which may act as facilitators for knowledge transfer between remote counterparts. In line with such advances in the IS field, scholars have increasingly considered the concept of the Transactive memory as the catalyst of knowledge transfer (Nevo & Wand 2005). Transactive memory (TM) was first introduced by (Wegner et al. 1985) to explain aspects of the behaviour in close relationship, and has been recently applied to groups (Liang et al. 1995; Moreland & Myaskovsky, 2000). In the information systems literature, Faraj and Sproull (2000) applied this concept to explain the coordination within software development project

teams. From that basis, recent researchers (Lewis et al. 2005; Oshri et al. 2008; Jackson & Klobas 2008) have started to incorporate interpersonal with technological substitutes such as organisational management IS to improve the functioning of organisational TM and subsequently connects TM memory that is later being termed as Transactive Memory System (TMS). The organisational knowledge and transctive process (e.g. encoding, storing and retrieving) involved in a transactive memory system (TMS) could support the transfer of knowledge between individuals (Nevo & Wand 2005). While the concept of transactive memory has been studied in the context of traditional organisational forms and collocated teams, little is known about the process through which a TMS in outsourcing projects teams could be created and could support knowledge transfer between remote sites. The early TMS studies were empirically tested but it was done in experimental or laboratory setting (Liang et al. 1995; Moreland & Myaskovsky 2000) rather than in real organisation's practices. The few studies that have indeed explored the concept of Transactive memory in virtual teams have highlighted the importance of it for team performance (Kanawattanachai & Yoo 2007; Hsu et al. 2012) without addressing the broader challenge of knowledge transfer specifically in IT outsourcing. Further studies to be undertaken to solve the knowledge transfer problem in IT outsourcing may consider incorporating TMS function besides the client and vendor factors mentioned earlier. Hence, the problem that this study will resolve is whether or not the identified client, vendor and TMS factors influencing knowledge transfer has a direct impact to the success of IT outsourcing.

1.4 RESEARCH OBJECTIVES

The problem discussed earlier is considered prolong problems among the Malaysian public agencies. Therefore, a solution to this problem is valuable to the government. Based on the problem statements discussed above, there are three main factors that are often associated with the knowledge transfer within the context of IT outsourcing. There are client factor, vendor factor and Transactive Memory System (TMS) factor. Accordingly, the aim of this study is divided into two. First, the research attempts to develop a viable knowledge transfer model that links between client, vendor and Transactive Memory System factors in e-government IT ousourcing context to explain

the effects of knowledge transfer towards ITO project success. Second, the research intends to develop TMS development functions guideline to facilitate knowledge transfer activities in IT Outsourcing, which will assist in the transfer of knowledge between the project experts and team members. Given the importance of knowledge transfer in ensuring the success of IT outsourcing, it is worthwhile investigating the concept further in order to harmonise with existing research. Therefore to achieve this purpose, the researcher lists six objectives to be achieved in this study:-

a. To determine the type of knowledge that is important during IT outsourcing
b. To investiage the existence of Transactive Memory System (TMS) routines in public agencies and to determine the TMS activities within IT outsourcing project routines that facilitate knowledge transfer
c. To identify the client, vendor and TMS factors that highly impact knowledge transfer in IT outsourcing
d. To identify the preferable mechanisms that can be used to transfer the knowledge during IT outsourcing
e. To determine the impact of various IT outsourcing approaches towards knowledge transfer
f. To suggest some of the solutions for knowledge transfer effectiveness in IT outsourcing project

By achieving these research objectives, this study will advance current knowledge about knowledge transfer factors that impacted IT outsourcing project success. Indeed, the study offers practical insights to project managers and team members in practice by integrating TMS element in knowledge transfer model. The study significantly will impact the way the government manage their IT projects in general besides promoting the in-house knowledge and skill development through the facilitation of TMS in knowledge transfer process. Hence, there are five propositions derived for the study. A set of research questions are asked in this research based from the propositions (refer Table 1.1) in order to achieve the research aim.

Table 1.1 Lists of propositions

	Hypotheses
H_{a1}	Vendor factor has a significant influence on knowledge transfer in IT Outsourcing
H_{a2}	Client factor has a significant influence on knowledge transfer in IT Outsourcing
H_{a3}	Transactive Memory System (TMS) factor has a significant influence on knowledge transfer in IT Outsourcing
H_{a4}	Knowledge Transfer has a significant influence on IT Outsourcing project success
H_{a5}	Different IT Outsourcing approach has a significant influence on knowledge transfer in IT Outsourcing

1.5 RESEARCH QUESTIONS

In line with the six objectives listed above, this research attempt to answer research questions as follows:-

a. What are the types of knowledge that is considered important to be transferred during IT outsourcing process?

b. Do Transactive Memory System (TMS) routines exist in public agencies? If public sectors have TMS in place, what are the TMS activities within IT outsourcing project routines that can facilitate knowledge transfer?

c. What are the client's, vendor's and TMS factors that highly impact knowledge transfer in IT outsourcing?

d. Which are the preferable mechanisms that can be used to transfer knowledge during IT outsourcing?

e. Do various IT outsourcing approaches significantly give impact to knowledge transfer?

f. How can knowledge transfer effectiveness be improved in e-government IT outsourcing project?

1.6   THEORETICAL FRAMEWORK

Theories are constructed in order to explain, predict and understand the phenomena (e.g. relationships, events, or the behaviour). The theoretical framework of the study is a structure that can hold or support underpinning theories employed by the researcher. It presents the theory which explains why the problem under study exists. According to Argote and Ingram (2000), the topic of knowledge transfer has long received attention in the literature on individual cognitive psychology. More recently, the phenomenon of knowledge transfer has figured prominently in the literatures on strategic management (Grant 2000; Nevo et al. 2008; Liang 2009; Zack & Singh 2010), organisational theory (Huber 1991; Lin et al. 2008; Oshri, Fenema, & Kotlarsky 2008; Pun & Nathai-balkissoon 2011; Kalsom et al. 2012) and sociology (Inkpen & Tsang 2005; Muthusamy 2005; Zhou et al. 2010). In the context of IT outsourcing, scholars predominantly integrated various theories to fit the objectives of the study. Generally, there are three theories which are widely used in the knowledge management study; Knowledge Based View (KBV), Social Exchange Theory (SET) and Organisational Learning Theory (OLT). Previous researchers combine these three theories because ITO projects often use a combination of complex technologies that pose a high knowledge burden and that are difficult for project members to grasp. In most cases, the ability of project members to learn and used technical knowledge as well as domain knowledge effectively is critical for the success of IT projects. Therefore, the uses of these theories are relevant to address the problems and challenges that exist in IT outsourcing.

Previous researchers used KBV theory to discuss the issues of knowledge transfer and knowledge aggregation not only in the context of ITO project teams. KBV theory has been adapted predominantly at organizational level to achive organisational competitive advantage. KBV theory reflects a fundamental shift in the past three decades moving towards knowledge age organisation compared to industrial age organisation (organisation relies on capital, land and labour as the primary resource). KBV introduces various concepts such as absorptive capacity, knowledge characteristics and transfer mechanisms as the key concepts that later enhanced the knowledge management research area. Furthermore, the success of an IT project also

depends on the extent to which each of the parties involved engage in successful and mutually beneficial exchange relationships (Xu & Ma 2008). IT outsourcing projects demand creative efforts that involve in-depth exchange of expertise and insights among partners, and partners need frequent communications with each other, dealing with complex project management issues. In this regard, previous researchers adopted the Social Exchange Theory (SET) to explain the phenomenon. Besides, SET is often used to discuss issues related to inter-firm learning. Inter-firm learning concept requires factors such as social interaction, reciprocity, social structure and incentive system to encourage learning. In the Malaysian norms, any learning initiatives need social interaction or conversation between the colleagues. Research done by Norizzati et al. (2009) revealed that more than 60 percent of Malaysian knowledge workers gained useful information through social interaction or daily conversation. This shows that it is important to integrate SET in this research.

Likewise, Organisational Learning Theory (OLT) is most often used to discuss issues related to the learning intention. Theorists and practitioners recognise the linkages that exist between knowledge management and learning where these two areas are so much interdependent and share a common purpose. This is because, KM area is a crossbreeding between the fields of organisational learning and quality management (Mikic et al. 1996). Organisational learning theory generally used to discuss issues such as knowledge acquisition, information distribution, information interpretation and organisational memory system (Huber 1991). Align with the context of the study and the research objectives; the researcher integrates three main theories; Knowledge Based View (KBV), Social Exchange Theory (SET) and Organisational Learning Theory (OL) to answer the research questions and to achieve research objectives. The selection of these theories is based on the concept of interest and its relationship to knowledge transfer and IT project success. Additionally, the selected theories are based on the review conducted by the researcher that is discussed in detail in Chapter II (literature review). Figure 1.1 depicts the theoretical lens employed by the researcher with the concept and relationship towards the focal construct of the study.
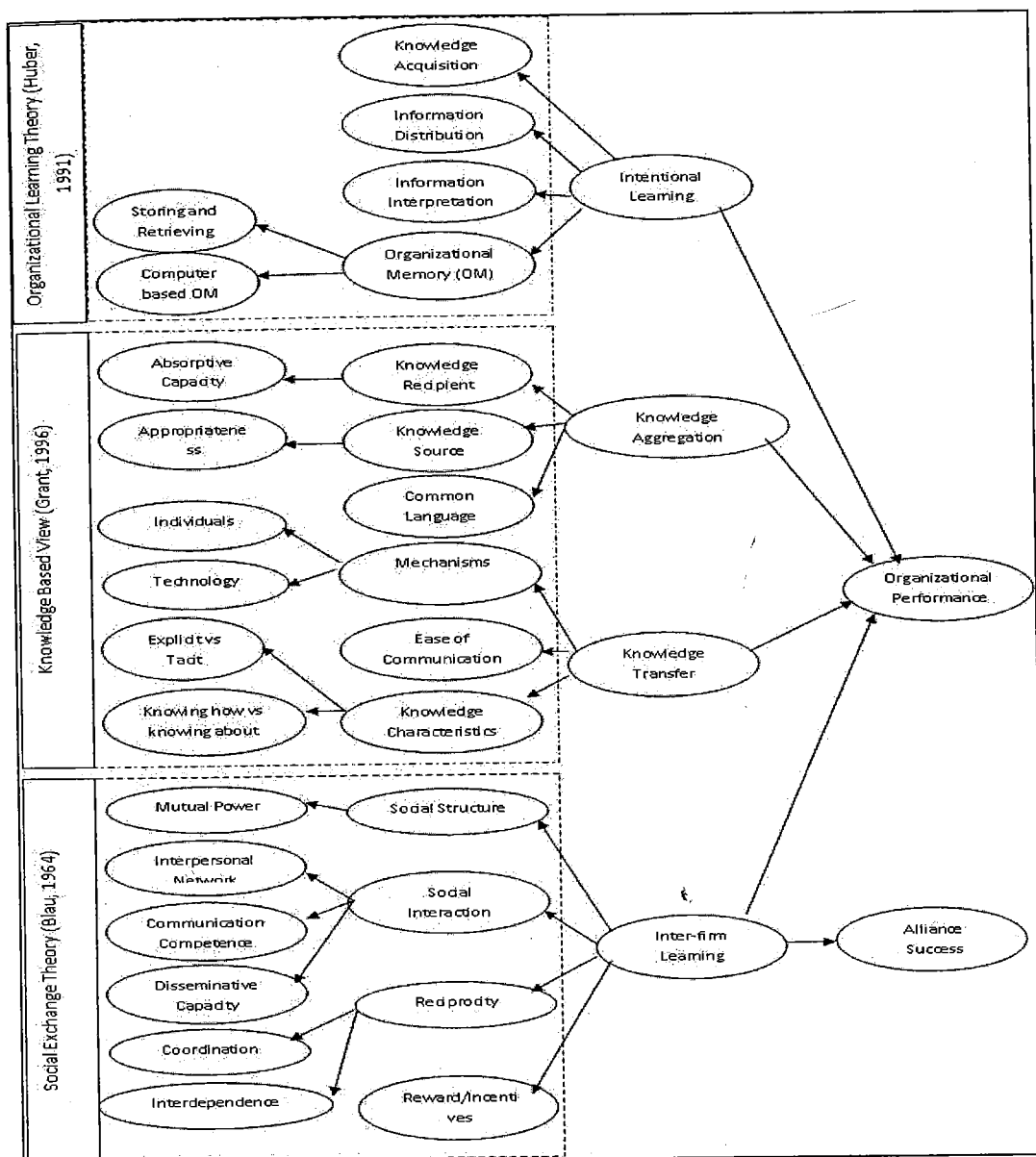
Figure 1.1 Theoretical Lens

Source: Blau (1964), Huber (1991) and Grant (1996)

1.7 SIGNIFICANCE OF THE RESEARCH

The purpose of this research stems from the observation that Malaysian public agencies require good methods for transferring the knowledge during ITO engagement with the vendor in order to reduce the probability of future project failures. The government relatively concerned with the tangible output of the project with less emphasising on the importance of the knowledge required in the operations.

Based from a keynote address speech given by Dr. Aliah (Deputy Director General ICT, MAMPU) at the National Digital Conference 2012, Malaysia government has identified three critical scales that need to be ventured in order to improve national performance index and economic growth. Among others is to set up a centralised government shared service centre besides facilitating discussions between government link companies (GLCs) and outsourcing providers. This initiative was aimed at promoting and developing Malaysia's Outsourcing Industry as well as to position the country as a leading global hub for high value shared services and outsourcing (S.S.O.) operations. The establishment as a global outsourcing hub, in return will add value to the national Gross Domestic Product (GDP) in 2020 with the expected increase of USD 2.1 billion (Malaysia current GDP is USD278.67 billion as reported by world bank in 2011) and create job opportunities with the expectation of 43 thousand vacancies in the year 2020. Additionally, Malaysia has been termed by auditing companies such as Frost & Sullivan, A.T. Kearney as well as McKinsey & CO. as a global leader in the shared service and outsourcing operations, and has consistently been ranked as the third most attractive destination for shared service and outsourcing, behind India and China. Malaysia is now challenging the traditional outsourcing hubs such as India and China because of its first class infrastructure, competitive cost structure, conducive business environment, strong government support, English speaking work force and political stability. Malaysia is ranked highly in five categories of outsourcing activities: customer support (e.g. Malaysia is a host for 250 call centres), back-office processing, supply chain management, IT support and analytics. The growth in outsourcing market in Malaysia makes it an important topic for research. This study aims to shed some light on knowledge transfer issue and should be of

interest to both researchers and practitioners in better understanding client-vendor partnership during the outsourcing engagement. The reports published by IDC Malaysia in 2009 shows that IT outsourcing market is better shielded from the effects of the economic downturn in 2008 especially on IT budgets, when compared with project-oriented, support and training services. Although the tsunami of the global economic downturn continues to impact the the global software outsourcing industry as a whole, but the vice versa situation happened in Malaysia. This situation shows the resilience of the IT sector in Malaysia as a whole even though Malaysia is not the big player of IT markets compared to United States.

Secondly, there are limited studies on KM in general and knowledge transfer specifically that have been conducted in Asia-pacific region (Teo 2012). This argument is supported by recent statistics reported by the Ministry of Higher Education. Typically, most research has been done in western countries with only 4.1% of citation come from Malaysia (Hayati 2012). Furthermore, literature in the KM field shows that there are only limited studies on knowledge transfer in public sectors particularly in Malaysia. Previous studies on Malaysia focused on KM implementation of government public services transformation (Norshidah 2009), KM impact towards universities' performance (Mohayidin et al. 2007), antecedents on knowledge transfer in general (Syed Ikhsan & Rowland 2004; Kalsom et al. 2012), and knowledge sharing practices in public agencies (Rahman 2011; Sandhu et al. 2011; Zawiyah et al. 2012). Research that combines the knowledge transfer concept particularly in IT outsourcing from Malaysian perspectives has never been seen as imperative. Most of the study ignored the impact of knowledge transfer between inter-organisational and much focus on intra-organisational context. Even though previous research in the area of IT outsourcing has applied various theories to understand the decision to outsource, and the subsequent success of an outsourced project, little research has been done to provide a perspective on the problems faced in IT outsourcing relationship between the public sectors.

Third, knowledge transfer is like the nucleus of joint-innovation in IT outsourcing as IT outsourcing is one of the strategic alliances between private-public sector (Sainio 2007). Based from the keynote address speech during MSC Malaysia

International Advisory Panel Meeting on 19 October 2011, Malaysia Prime Minister has promoted the digitalisation of Malaysia government and innovative capacity among government servants by leveraging ICT in all aspects of government arms and proactively respond to the citizen needs since digitalisation and innovation is the cornerstone of the National Transformation Programs (NTP) agenda together with the Economic Transfer Program (ETP). Organisational innovation and the emergence of knowledge will enhance the e-Government projects to be better, more efficient services, the empowerment of the civil servant in his or her task, supporting complex decision making and collaboration. Public administrations are knowledge intensive organisations; hence, the prospects for knowledge transfer in e-Government are remarkable.

Lastly, e-government projects have been very often quite generous endowed. Malaysia, for example, has earmarked RM 212 billion in 10th Malaysia Plan budget for government ICT initiatives and each year the budget allocation is increasing. Looking at the enormous amount invested by the Malaysian Government towards e-government projects, it is significant for the researcher to look into the return of investment (ROI) from the e-government outsourcing projects. In the context of study, ROI of outsourcing relationship is to build internal government technical and business skills and expertise; to align with the six policy target outlined by MAMPU. Besides, government and citizen must get some benefits from the projects rather than only percentage of failure project reported by various researchers. Realising the importance of knowledge transfer in outsourcing as a means to develop government knowledge and skill based, there is a need to better understand how the knowledge transfer from the vendor to the client could achieve the targeted policy.

1.8   SCOPE OF RESEARCH

In general, this study will only concentrate on the e-government applications defined by the Malaysian government. Non-electronic government flagship applications will not be included in the study scope since they are not part of the e-government flagship package as defined in the MSC initiative. This is to ensure that the result of the study is only based on the defined e-government applications and not based on

the all government-based applications found in Malaysia. The process of data collection will be held within three federal agencies located at Putrajaya and Cyberjaya that have been appointed as e-government lead agencies. The choice of these three agencies is based on the achievement and recognition received by the agencies involved in efforts to strengthen e-government projects. The three agencies involved have achieved among the highest e-government application users in Malaysia. Besides, the studies will incorporates vendor's representatives that involved in the e-government for expert validation. Level of analysis of this study is IT outsourcing project team members. Meanwhile, unit analysis of the study is among the IT scheme personnel ranging from top level management to operational level management to gain better understanding and a wide range of data interpretations regarding the level of knowledge transfer, factors that explained the phenomenon and IT project success in government.

It is important to highlight that scope of this analysis is e-government outsourced project whereby the contracted vendor is among local native vendors. Hence, this research does not take into account for areas such as in-sourcing or offshoring. This is because issues and problems related with in-sourcing likely to be different from outsourcing (Alsudairi & Dwivedi 2010). Furthermore, most of IT project at Malaysia public agencies are contracted to local vendors instead of international vendors as stated in the government procurement policy. Throughout the whole outsourcing lifecycle, some factors should be given more attention according to different phases. In the case of this study, the researcher chooses the e-government outsourcing projects that being monitored and regulated by three federal agencies. The selected projects are among the e-government kick-starts projects. This selection is based on several justifications. First, the selected agencies have at least received a star rating award for the e-government initiatives. This will reduce the bias in the selection of the sample size. Secondly, the selected projects involve single vendor; therefore, it will reduce the complexity of the knowledge transferring process compared to multi-sourcing project. Information on a series of variables (independent and dependent variables) was extracted after conduction a systematic literature review of IT/IS outsourcing related issues, knowledge transfer, organisational learning and TMS; besides the published and unpublished document in such as working papers, keynote

addresses and post-graduate dissertation for the latest facts. The findings of this research may have implications for both private and public sector organisations interested in outsourcing their IT/IS service and applications, and various stakeholders or shareholders of academic publishing (namely, researchers, journal editors, reviewers, and universities) research on IT/IS outsourcing.

1.9 RESEARCH LIMITATIONS

Given the contribution of the study of theoretical and practical perspectives, the study reveals several limitations. There are two main limitations in this study. The first limitation is related to the context of the study and second limitation is regarding the chosen method.

This study was conducted to propose an integrated model for the Malaysian e-government IT outsourcing project that have been listed under MSC based on client perspectives. Hence, the study is limited in a single country and within a single sector setting (mainly at the federal government level in Malaysia), which therefore does limit the external validity. However, conducting research in a single setting provides the researcher with a better control over market and environmental differences and sector effects (Chen, 2011). With that, the results of this study may not be generalised to the others such as private or manufacturing sector. There is a possibility that the different findings would be produced if the study is carried out in the private sector because public agencies are still constraint with traditional bureaucratic model and driven by a set of policies and political in decision making process (Abdullah, & Date 2009). Although the studies were carried out only in 3 government agencies, due to the homogenous population and practices of government employees, there is high probability the similar findings would be obtained in different public agencies. Nevertheless, given the traditions of governmental transformation in Malaysia, and the fact that the levels of organisation investment in IT are growing; hence, the objectives of this study should highlight the importance of knowledge transfer in IT project. The fact that it is not bears into consideration. Additionally, the findings of this study may not be universally applicable to other countries. To the best of the researcher's knowledge, this work is one of the first to propose an acceptable knowledge transfer

model for the Malaysian e-Government. Currently, there is no standardised knowledge transfer model for e-government IT outsourcing that is followed. Each agency works with their selected vendor to decide on the strategies and frameworks while complying with government regulation and policies.

In terms of method chosen, the researcher discusses four limitations. First, in spite of every care being taken in designing the survey instrument as per the best research methodology practices, the wording of the questions might have influenced the responses. This is because the 1st version of the survey questionnaire was printed in English. Thus, the researcher needs to back translate the questionnaire in Malay. However, from the respondents feedback collected during pilot-testing phase, only operational-level respondents experienced problems understanding the meaning and terms used in the survey; whereas, the middle and top level management did not encountered any problem to understand the meaning. The researcher has done at the very best level to concise the questions and used basic grammar and vocabulary. From the result of the study, the impact of two language versions is minimal. Thus, future researchers should take note on the language proficiency of the respondents especially when the survey includes various levels of educational background.

The second limitation is related to sample and sampling methods. Purposive sampling rather than random sampling was used in the empirical study. While the sampling strategy is the most appropriate and practical method in Malaysia situation, but still there is a shortage in the number of respondents. This is because there is a number of key persons in the project team could not participate in this study because of a job promotion and study leave during the survey work carried out. However, the researcher optimist that the model is stable as unit analysis of the study is homogeneous in nature. The model may be applied to other Malaysia's federal agencies as the investigated outsourced services/applications are being used widely across all 94 public agencies in Malaysia. In Malaysia, public agencies are still bonded with the similar procurement process as regulated by the Ministry of Finance (MOF) since any tendering process or contract construction must follow the same guidelines. Besides, knowledge transfer should be studied as a long-term process to understand the degree of clients' knowledge adoption and utilisation after being

transferred. However, this project data was collected at a point of time using a cross-sectional methodology; hence, the present research does not show how client–vendor knowledge transfer develops over time (Chua & Pan 2008).

The third limitation is related to the unidirectional knowledge transfer model. The model assumes the client as the knowledge recipient while the vendor is the knowledge source. The study does not employ client and vendor matched-pair data set to incorporate both client and vendor viewpoints, providing better understanding of knowledge transfer in a dyadic relationship. In reality, the transferring process of IT outsourcing happens on both sides. The researcher has tried to collect data from vendors by asking clients to provide the contact information of their vendors. Unfortunately, only a small percentage of the clients provided such information. It is plausible that clients are not comfortable providing the names of their vendors due to competitive reasons, security reasons, or others. Future research can devise other ways to obtain a matched-pair sample from clients and vendors.

The fourth limitation is related to the scale used to measure each construct in the model. Subjective measures of knowledge transfer constructs were primarily used in this study compared to objective measurement. This is due to the fact that the respondent is doubtful to quantify the volume of knowledge being transferred and used. Thus, there is a potential risk for common method bias due to the use of self-reported questionnaires, containing mainly subjective measures. Nevertheless, many of the previous studies on knowledge transfer have used similar subjective measures. There is also significant literature on cognitive perception that supports the use of perceptual measures. Therefore, while the perceptual measures might be improved through the use of more direct measures, their adoption in this study is widely consistent with the intended research questions. Additionally, the fact that there are two main constructs were newly developed (TMS and knowledge transfer) in the studies, the operationalisation of these concepts in the present study has been developed according to the context of the study. Attempts have been made to demonstrate robustness of the scales through consistency and validity tests such as covariance based SEM.

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