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Factors Influencing Knowledge Transfer in Onshore Information Systems Outsourcing in Ethiopia

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ABSTRACT

Knowledge transfer in onshore information systems (IS) outsourcing projects in Africa is an important but under-researched phenomenon. This study focuses on the client-vendor perspective and examines the factors that influence knowledge transfer in onshore information systems outsourcing in Ethiopia. Conceptually, knowledge-based perspectives of IS outsourcing is used to identify an initial set of factors to frame the empirical study. This is followed by semi-structured interviews with ten project managers. The findings indicate that five key factors, namely mutual absorptive capacity, mutual learning intent, mutual trust, mutual disseminative capacity and project staff turnover influence knowledge transfer in outsourced IS projects. The results suggest that development and management of the resources, processes and behaviors implied by these factors are vital to ensure successful inter-organizational knowledge transfer and to reverse or minimize the failure rates of outsourced IS projects. The study concludes with implications for research and practice.

Keywords: Knowledge Transfer, Outsourcing, Information Systems, Onshoring, Ethiopia

INTRODUCTION

Information systems outsourcing (ISO) is a contractual agreement between a client and a vendor for the development and/or implementation of information systems (IS) within an agreed time period (Bergkvist and Fredriksson, 2008). Several organizations in developing countries rely on both offshore and onshore outsourcing contracts to meet their ever-increasing information systems requirements (Abbott, 2013). In the context of Ethiopia, even if the local Information Technology (IT) industry is immature, several IS development and implementation projects are undertaken by outsourcing (and specifically through onshoring) means (Birru, 2008; Lixi and Dahan, 2014). Indeed, both public and private Ethiopian organizations follow onshoring as one of their IS sourcing strategies (Beyene, Negash and Bandyopadhyay, 2015; Lixi and Dahan, 2014). However, a higher rate of ISO failures is reported both in Ethiopia and other developing countries (Abbott, 2013; Beyene et al., 2015). For example, some IS projects, even if developed in advanced countries, failed to be operational because of lack of skilled personnel to assimilate the developed systems and inadequate capacity to implement them (Mengesha, 2010). Others face problems of scalability and upgradability (Avgerou, 2008). Overall, it is widely reported that a large number of ISO projects are not successful (Mehta and Mehta, 2017). For example, 60% of client organizations did not achieve their pre-defined targets from their outsourcing arrangements (Horvath, 2014) and failures of vendors to deliver the expected outsourcing service to clients (Wang, Sasanipoor and Wang, 2018).

Outsourcing research shows that part of the problem for the high rate of ISO failures is ineffective knowledge transfer between outsourcing partners (Betz, Oberweis and Stephan, 2014; Teo and Bhattacharjee, 2014). If both business and technical knowledge is transferred effectively, it can lead to better requirements definition, and improved vendor's capability to deliver the project on time, budget and with the required quality (Gregory, Beck and Prifling, 2009). In the same way, it can also help clients to effectively utilize and maintain the newly implemented IS (Wang and Gan, 2010). While some knowledge transfer can occur due to contractual requirements (Teo and Bhattacharjee, 2014), it is difficult to codify and formalize all tacit knowledge, such as business processes and technical know-how (Duggan, 2015). Consequently, contractual requirements are necessary, but inadequate, for effective transfer of knowledge in ISO arrangements. Despite the recognized benefits of knowledge in ISO, there are many factors affecting its transfer between outsourcing partners.

Prior studies of ISO in Africa and other developing countries focused on economic and non-economic factors affecting the success of offshore ISO and business process outsourcing (BPO) (Abbott, 2013) and how these countries can become offshore ISO/BPO destinations (Abbott, 2013; Omoju, 2017). While there have been some attempts to study factors affecting knowledge transfer in ISO in the context of developing countries (Al-Salti, Hackney and Özkan, 2010; Deng and Mao, 2012), inspection of literature (including all the relevant papers published in the African Journal of Information Systems) indicates that the challenges of knowledge transfer in onshore outsourcing contracts in African countries is under-researched. This oversight needs to be addressed because of the key roles local vendors play to fulfill information systems needs of African countries and the importance of local IT industry growth to tap into the global outsourcing market. For example, the Government of Ethiopia, in its five-year plan (2011-2015), had strategized for the implementation of 219 e-government projects with an estimated budget of US\$201.5 million (UNCTAD, 2013). Some of the IS in these projects were expected to be undertaken by local vendors due to both language requirements and the government's commitment to strengthen local capacity. Furthermore, prior studies of knowledge transfer took either a client or a vendor perspective (Teo and Bhattacharjee, 2014; Williams, 2011), but not both. Therefore, in this

paper, we investigate what influences effective knowledge transfer by taking the perspectives of both clients and vendors through the following two questions:

- *What are the key factors that influence knowledge transfer in onshore IS outsourcing relationships?*
- *How do those factors affect knowledge transfer in onshore IS outsourcing relationships?*

The rest of the paper is organized as follows: the next section presents review of literature on ISO in general, knowledge transfer in ISO arrangement, and factors affecting knowledge transfer in ISO. Thereafter, the research method employed and data collection techniques are highlighted. Then, based on the data collected, data analysis and discussion of key findings are made. The final section concludes the paper, outlines implications and limitations of the study, and makes recommendations for future research.

BACKGROUND LITERATURE

Overview of Information Systems Outsourcing (ISO)

In a highly competitive and rapidly changing business environment, organizations are increasingly relying on IS to achieve their strategic and operational goals. As a result, organizations are under pressure to seek out strategies for successful delivery of IS products and services (Sedera et al., 2014) including through ISO strategies (Mehta and Mehta, 2017). The global IS/IT outsourcing market is estimated to be US\$64.3 billion, with a compound annual growth rate (CAGR) of 2.4% between 2018 to 2021 (Yan, 2018). The African share of revenues from the outsourcing sector has reached nearly US\$2 billion, growing at 30 to 40% annually (Lixi and Dahan, 2014). Globally, the focus of ISO has shifted in several ways. First, the strategic intent of IS outsourcing has moved into access to external expertise, knowledge, and capabilities (Mehta and Mehta, 2017). Second, the investment on IT outsourcing has considerably shifted from cost reduction to business value such as service quality, speed to market, and customer value (Wang et al., 2018). Third, as organizations increasingly consider outsourcing for innovation and competitive advantages, there are changes to the nature of jobs outsourced (Mehta and Mehta, 2017). Fourth, besides business organizations, the public sector has become an active player in the IT outsourcing arena (Hamid and Salim, 2011; Moon et al., 2014). Lastly, most outsourcing organizations tend to seek increasingly smaller contracts of shorter duration with multiple vendors that deliver interdependent IT products and services by rejecting large-scale long-term contracts with a single vendor (Sedera et al., 2014). All of these shifts elevate the importance of knowledge transfer.

Knowledge Transfer in ISO

Knowledge transfer in ISO can be defined as a bi-directional exchange of knowledge where outsourcing partners play interchangeable roles (as a knowledge source and a knowledge receiver) so that knowledge is learned and applied to achieve business outcomes (Ko, Kirsch and King, 2005). From a knowledge-based view (KBV) perspective, ISO is one of the ways for gaining access to knowledge resources that are critical to a firm's development and performance improvement (Azad and Ahn, 2014). ISO provides an opportunity for the transfer of essential knowledge between client and vendor firms so that the outcome of outsourced IS projects can be enhanced (Blumenberg, Wagner and Beimborn, 2009).

According to the KBV, two main types of knowledge are required and need to be exchanged between outsourcing partners. These include business knowledge and technical knowledge (Blumenberg et al., 2009; Hamid and Salim, 2011). Business knowledge refers to the knowledge related to the client's

business processes, business rules, policies and procedures, and requirements for the new system (Gregory et al., 2009). This type of knowledge is mainly possessed by clients. On the other hand, technical knowledge involves the knowledge about system design, programming, and IS development processes, methods, techniques, tools, and approaches (Xu and Ma, 2008). This technical knowledge is mostly owned by vendors. Thus, ISO is a knowledge-intensive process involving the transfer and integration of the business knowledge of a client with the technical knowledge of a vendor for ensuring success (Deng and Mao, 2012; Hamid and Salim, 2011). However, in practice, knowledge transfer between outsourcing partners is a challenging task influenced by many factors.

A Conceptual Framing of Factors Affecting Knowledge Transfer in ISO

From previous IS theoretical and empirical research, six main categories of factors that might affect the successful transfer of knowledge between outsourcing partners can be identified. These are knowledge, source, recipient, relationship, project, and knowledge transfer related factors (Al-Salti et al., 2010; Deng and Mao, 2012).

Ko (2014) found that client-consultant perceptions of each other's trust affect knowledge transfer effectiveness from consultants to business clients. Teo and Bhattacharjee (2014) examined the antecedents and outcomes of knowledge transfer and utilization in a survey of 146 IT outsourcing partnerships in Singapore. Their findings show that client motivation, vendor willingness, and knowledge codifiability have significant effects on successful knowledge transfer. Park and Lee (2014) studied behavioral mechanisms that encourage project partners to share knowledge in information systems implementation projects in Korea. The results indicate that dependence and trust have strong impact on knowledge sharing at a project team level. Williams (2011) demonstrates that formal training and client embedment facilitate knowledge transfer from onshore clients to Indian offshore vendors.

Deng and Mao (2012) examined factors influencing knowledge transfer from clients to vendors. Their results show that clients' support and knowledge articulation contribute significantly to knowledge transfer. From Chinese vendors' perspective, Xu and Yao (2013) reported that use of software development methodology and relationships with client facilitate knowledge sharing with the vendor. In addition, based on clients' view, Liao et al.'s (2009) study indicates that trust and shared vision are significant antecedents of knowledge sharing. From the above reviewed studies, while the works of Deng and Mao (2012), Williams (2011), and Xu and Yao (2013) were focused on vendors' perspective, Teo and Bhattacharjee (2014) and Liao et al. (2009) studies were from the clients' perspective.

Set of Factors	Specific Factors	References
Knowledge-related	Knowledge Tacitness	Al-Salti et al. (2010)
	Knowledge Codifiability	Teo and Bhattacharjee (2014)
	Knowledge Complexity	Al-Salti et al. (2010)
Source-related	Willingness	Teo and Bhattacharjee (2014)
	Disseminative Capacity	Hamid and Salim (2011)
Recipient-related	Learning Intent	Al-Salti et al. (2010), Deng and Mao (2012)
	Absorptive Capacity	Ko et al., (2005), Al-Salti et al. (2010)
	Motivation	Teo and Bhattacharjee (2014)
Relationship-related	Relationship Quality	Xu and Yao (2013)
	Trust	Park and Lee (2014), Deng and Mao (2012)
	Organizational Distance	Al-Salti et al. (2010)

Project-related	Project Novelty	Tiwana (2004), Nidhra et al. (2013)
	Project Staff Turnover	Nidhra et al. (2013)
Transfer Mechanisms	Formal and informal training	Williams (2011), Deng and Mao (2012)

Table 1. Initial Category of Factors that Might Affect Knowledge Transfer in ISO

Considering both clients and vendors perspectives, Al-Salti et al. (2010) identify the nature and characteristics of knowledge. They consider clients' absorptive capacity and motivation; vendors' trustworthiness, credibility, and capability; as well as organizational distance and the quality of the relationship between clients and vendors as important factors impacting knowledge transfer success in ISO. The findings of Huong, Katsuhiko and Chi (2011) show that good impressions and willingness to cooperate facilitate knowledge transfer while communication barriers and lack of equivalence in individual competence hamper knowledge transfer processes. Besides, Tiwana (2004) and Nidhra et al. (2013) argue that project novelty hampers the transfer of knowledge between clients and vendors. Furthermore, Nidhra et al. (2013) indicate that staff turnover can negatively impact knowledge transfer. Based on the above literature review, six categories of factors (see Table1) were used to frame the empirical studies.

RESEARCH METHOD

Research Context

The empirical research was conducted in Ethiopia. Ethiopia has yet to be included in the index for global services location attractiveness (Kearney, 2016). Nevertheless, Ethiopia, because of its pool of mathematics talent (one of the conditions for software industry development), has also been identified as one of the African countries that has a good opportunity to advance its local software development and ITO/BPO (Abbott, 2013).

There are no reliable statistics on total spending on the domestic IS/IT outsourcing market in Ethiopia. Nonetheless, there has been a steady increase in the number of companies engaged in software development and the service sector, as well as in local ISO practices (Birru, 2008; Lixi and Dahan, 2014). For example, the number of companies specializing in IT-based services was estimated around 200 in 2014 (Lixi and Dahan, 2014). In 2016, according to the Ethiopian Communications and Information Technology Standardization and Regulation Directorate, the number of software development companies had grown to 373, although most remain relatively young and small.

To attract and encourage investment in IT and IS outsourcing sectors, the government of Ethiopia developed the EthioICT-Village with the prime aim of attracting IT service companies to be involved in business process outsourcing and stimulating growth of the domestic IT industry (Adam, 2012). The ICT-Village is intended to provide a wide range of services including high speed broadband connectivity, incubation facilities, data centers, and consultancy services. In addition, the government of Ethiopia has drafted a National ICT policy to support the maturity and prosperity of the IT industry in the country. One of the key objectives of this policy is to expand and strengthen the role of the private sector in the development of IS applications and provision of services to satisfy the growing demands of the society. However, in practice, it is claimed that the local IT sector is not getting meaningful support and encouragement. According to Lixi and Dahan (2014), indigenous Ethiopian IT companies have received minimal incentives from the government such as tax incentives, tax holidays, and loans.

Data Collection

To address the research questions, a qualitative approach using semi-structured interviews was chosen. Semi-structured interviews enable a researcher to capture respondents' interpretations and their experience of the problem under study (Creswell, 2009). Moreover, semi-structured interviews are used for raising both open-ended and closed-ended questions to elicit views and opinions of participants.

The identification of study participants started with vendors and then snowballed to the corresponding clients. Vendors were chosen as initial contacts for two reasons. First, vendors are easily identifiable from the database of the Ministry of Communication and Information Technology (MCIT). Second, projects and their respective clients can be identified by asking vendors. Hence, local software vendors were selected based on two criteria. Initially, vendors engaged in public sector organizations' information systems development projects were identified. This is because public sector organizations are the main actors in the domestic IS outsourcing market of Ethiopia (Lixi and Dahan, 2014; MCIT, 2014) and the list of vendors working with them was available from the E-government Directorate of MCIT and the Addis Ababa City ICT Development Agency. Then, those vendors that provided adequate background information in the 2016 ICT Ethiopia Exhibitors' Guide about their clients and the type of outsourced information systems development projects they had accomplished since their establishments were selected. Through this process, ten organizations that consist of four vendors and six clients that have completed at least one IS outsourcing project were chosen. All participating organizations were located in the capital city of Ethiopia, Addis Ababa.

Data were obtained through two-step face-to-face interviews. In the first step, the four project managers or individuals with an equivalent title were interviewed from the vendor organizations. Then, vendor side project managers were asked to identify project managers (or equivalent title) in the six client organizations. Using the initial set of factors identified from the literature as a framing, both client and vendor side project managers were asked about the knowledge transfer, the types of knowledge needed to be transferred, the factors influencing knowledge transfer during outsourced IS development projects and the value of knowledge in outsourcing success. The profile of interviewees is shown in Table 2. Each interview lasted between sixty to ninety minutes.

Organizations	Role of Interviewees in ISO Project	Permanent Position of the Interviewee
Client U	Project Manager	Junior Programmer
Client W	Project Manager	ICT Director
Client X	Project Manager	IT Unit Head
Client Y	Project Manager	Senior System Analyst
Client Z	Project Manager	Deputy ICT Director
Client V	Project Manager	ICT Head
Vendor B	Project Manager	Chief Executive Officer
Vendor A	Project Manager	Software Development Expert
Vendor D	Project Manager	Senior Programmer
Vendor C	Project Manager	Chief Executive Officer

Table 2. Profiles of Interviewees

DATA ANALYSIS AND RESULTS

The collected data were analyzed using a deductive-thematic analysis technique (Boyatzis, 1998). This technique allows identifying, analyzing, and reporting themes or patterns within qualitative data (Creswell, 2009). The themes are the concepts of the research framing (Table 1). In other words, initial

concepts were taken from the literature and then matched with the interview data that demonstrate the concept. NVivo software (Version 11) was used to analyze the data (see Appendix 1 for coding tree).

The findings return five factors related to four categories affecting knowledge transfer in ISO relationships. These are source-related (mutual disseminative capacity), recipient-related (mutual absorptive capacity and mutual learning intent), relationship-related (mutual trust), and project-related (project staff turnover) factors. Figure 1 depicts this result and the ensuing sub-sections discuss the findings in detail.

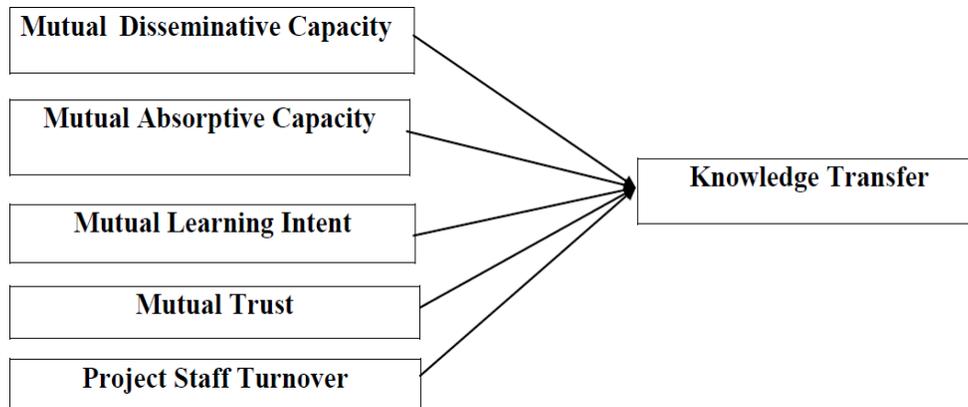


Figure 1. Factors Affecting Knowledge Transfer in Onshore ISO in Ethiopia

Knowledge Source-Related Factor

Mutual Disseminative Capacity: Disseminative capacity is the ability of the knowledge source to codify, articulate, and communicate the required knowledge by using appropriate transfer mechanisms to the recipient (Mu, Tang and MacLachlan, 2010). In IS development, vendors and clients play both a knowledge sender and receiver role at different phases of a project. As knowledge senders, clients transfer their requirements, business process knowledge, business expertise, and organizational culture (Wang and Gan, 2010; Williams, 2011). Thus, they are expected to clearly express their needs and effectively pass it to vendors. In addition, vendors need to have the capacity to articulate and deliver to clients technical and process knowledge, as well as the use and features of the new system. Although knowledge transfer literature explains the necessity of disseminative capacity of a knowledge source to achieve knowledge transfer success, the response from the project manager of Vendor D illustrates the challenge in Ethiopia:

The RFP document is not sufficient for the design and development of the new system. When clients are asked for their requirements, they tell us some but not all. They missed some important work flows or consider it unnecessary where in reality it was very important to prepare a detailed requirements document. As a result, the development team was forced to move back and forth during the development of the system.

Asked about the solution, project manager of Vendor D said:

Following interviews of client's needs and expectations, we share with end-users the notes we took. When the end-users get these requirements in written form, they responded by saying I didn't mean like that, and add additional points, etc.

Some clients have very limited disseminative capacity as well as poor understanding of the value of accurate and complete knowledge transfer to vendors. As a result, instead of developing their own requirements, they directly copy requirements from the Internet and put the same for vendors' bidding. In this regard, project manager of Vendor B noted:

Some clients prepare their tender documents directly from the Internet with a kind of copy-paste requirements. When we started our work and requested clients for clarifications, they are not providing us the proper explanations about it.

Most clients and vendors, despite their disseminative capacity limitations, heavily rely on documented or written forms of knowledge transfer. To transfer their knowledge, clients formally document their requirements and feedback on deliverables produced by the vendor. On their part, vendors prepare written replies to clients showing what has been done on each feedback item. The statement below reflects the views of vendors.

[...] we collect requirements from our clients and prepare detailed documents. After demonstration of the prototype and conducting system testing, clients send their feedbacks supported by an official letter[...] Similarly, we will send an official document back to the client that notifies the removal of those identified errors/bugs (Project Manager, Vendor C).

Asked about the reasons for their reliance on officially written document exchanges, project manager of Client X gives two reasons:

[...] (1) It provides confidence for the vendor for having officially agreed requirements and facilitates IS development activities; (2) the test results generated by our technical staffs allow the vendor to address those errors/bugs mentioned in our official system test reports.

Even though the written form of knowledge transfer has its own advantages, it is inadequate. Some knowledge is difficult to codify and can only be transferred through direct interactions between clients and vendors (Duggan, 2015; Williams, 2011). Therefore, clients and vendors need to employ appropriate transfer mechanisms to facilitate the transfer of relevant knowledge to each other.

Nonetheless, the findings indicate that disseminative capacity is an ability needed by both clients and vendors to transfer knowledge to each other. The study also shows that the low level of mutual disseminative capacity of outsourcing partners affects the successful transfer of knowledge in outsourcing relationships.

Knowledge Recipient-Related Factors

Mutual Absorptive Capacity: Absorptive capacity is defined as the ability of a recipient to recognize the value, assimilate, transform, and exploit new external knowledge to outsourcing tasks (Ko et al., 2005). During an outsourced IS development project, knowledge flows in both directions and outsourcing

partners play different roles. When a client transfers its knowledge, a vendor becomes a recipient and vice versa. Accordingly, the development of mutual absorptive capacity of partners is crucial for effective utilization of transferred knowledge (Easterby-Smith, Lyles and Tsang, 2008). However, both clients and vendors in Ethiopia lack absorptive capacity which makes knowledge transfer ineffective. For example, Client W indicates the lack of absorptive capacity of vendors and its associated effect as follows:

[...] however; the vendor has limitation to understand and take our requirements and make the necessary modification based on our feedbacks following the test of the prototype it produced. Thus, one module of the completed software system is not providing the intended functionalities (Project Manager, Client W).

Vendors' lack of absorptive capacity is partly associated with lack of specialized staffs for different activities of IS development. A person who is skillful and knowledgeable in writing software codes might not be effective in capturing the stated requirements and effectively translating these requirements into technical specifications. Project manager of Client X shared his experience as:

[...] for a given outsourced IS development project, one person acts as a system analyst, a designer, a programmer, a tester, a project manager, etc. This will have its own impact on the outcome of the project.

The exploratory study also indicates that clients have low absorptive capacity. A client with low level of absorptive capacity is less likely to utilize the newly transferred knowledge from a vendor and to ensure the ongoing operations of the implemented IS. The following two statements illustrate the effect of low absorptive capacity of clients on knowledge transfer:

Clients are not technically capable and qualified enough to take over the completed IS project and strive for the ongoing operations of it. As a result, trainings and implementation of the projects were challenging for us (Project Manager, Vendor C).

No follow up for the proper functioning of the deployed system by clients. [...] a minor problem such as unplugged cables may make the end-user to stop using the computerized IS. They make repeated calls when they faced with problems while using the newly implemented system though the technical support warranty expired [...] (Project Manager, Vendor D).

Therefore, the lower level of mutual absorptive capacity of outsourcing partners inhibits effective transfer of knowledge in ISO arrangements.

Mutual Learning Intent: Inter-organizational relationships provide opportunities for learning (Teo and Bhattacharjee, 2014). In the context of ISO, the vendor is expected to learn the client's business environment. Similarly, the client needs to learn technical knowledge and best practices from the vendor. Though partners can develop missing knowledge and skills through learning, a partner needs to have the intent to learn in the first place (Hamel, 1991). Learning intent refers to the extent of desire and will of an organization to learn from its partner during an outsourcing relationship (Simonin, 2004). Asked to comment on the transfer of technical knowledge to the client, project manager of Vendor D expressed:

[...] after getting the necessary feedbacks related to systems security from the clients, we will provide trainings to the focal person representing the client company. Then, we see closely how this person creates user accounts, passwords, and defines access privileges. In case the person faced difficulties, we will teach him again to have the knowledge and skills for doing these activities successfully.

From the above response, it can be argued that vendor's activities in transferring its technical knowledge produce satisfactory outcomes when the client has the intent to learn. Without the client's motivation to learn, the sole effort of the vendor is insufficient to guarantee effective transfer of knowledge. Project manager of Client Z stated that:

Our IT staff lack motivation to upgrade their knowledge and skills. They become satisfied with a portion of a given training provided by the vendor. They said why should I know more. Sometimes they missed the training sessions.

When clients lack motivation to participate in vendors' training sessions, the necessary knowledge to be transferred from vendors to clients becomes ineffective and the implementation of the newly developed system a failure. Project manager of Vendor C reiterated its client's lack of intent to learn as follows:

[...] during the training sessions, trainees are not actively participating; others missed the training. Such repeated acts had made the project closing a headache for us.

Furthermore, the analysis of the exploratory study shows that clients' staffs are not interested to learn and actively participate in the development process of a system. According to them, such participation is considered an extra task. The following statement from project manager of Client X illustrates this point:

Mostly, the IT staffs are not interested, and the technical training is considered as an extra task or burden for them. They prefer to escape it by any means.

In the same way, vendors' learning intent has an impact on the transfer of knowledge during a project. If vendors' learning intent is low, obtaining knowledge about clients' specific needs and requirements becomes inadequate. Project manager of Client Y mentioned the situation as follows:

[...] during the project undertakings, the vendor was unwilling to give ears to our comments and suggestions. Thus, the vendor made the system to be implemented with its defects simply by announcing to the top management its completion.

On the other hand, when a vendor's learning intent is high, it appreciates clients' feedback and uses it for project-specific tasks. Moreover, the vendor can learn the client's business environment and explore additional marketing opportunities. Project manager of Client X mentioned:

The vendor got encouraged by our IT team's technical capability and experience. The client's feedbacks were considered as an input for this project by the vendor. I am sure that the knowledge they acquired from the business domain helps the vendor to better aware the problems encountered during our project undertakings and tackle those problems systematically when encountered in other projects.

Therefore, mutual learning intent facilitates successful transfer of knowledge between outsourcing partners. If one party is motivated to learn and the other lacks this motivation, knowledge transfer becomes ineffectual, which in turn affects ISO success.

Relationship-Related Factor

Mutual Trust: Trust between outsourcing partners is important for effective transfer of knowledge (Ko, 2014). Due to the knowledge-rich work of information systems development, clients and vendors rely on each other's knowledge. In the current outsourcing practice of Ethiopian organizations, most clients lack confidence in their vendors' development capability. In their words, project managers of Client Z and Client U describe the absence of trust between outsourcing parties respectively as follows:

When the project is launched, and the vendor realized that the project is beyond its capability, the vendor withdraws from the contract. The vendor's goal was to win the bid and get the initial payment during the start of the project without worrying about the project completion (Project Manager, Client Z).

Local vendors are not capable of working on large projects. They lack up-to-date knowledge and skills and they are in short of technical manpower (Project Manager, Client U).

Supporting the above responses, project manager of Client X said:

The success rate of most IS projects that were undertaken by local software companies is low. Only one or two modules of the deployed system are functioning, but others are not functioning or are defective.

Due to the trust deficit between clients and local software development vendors, clients have a very biased perception of local vendors and often see them as incompetent. Project manager of Vendor B described this as:

Even if a local software company has the technical capability, clients are more comfortable to deal with foreign vendors as they have no budget problem when they signed a contract with these vendors.

Vendors, on the other hand, believe that clients are less experienced and lack technical knowledge. Project manager of Vendor B replied, "[...] IT staffs of client organizations lack technical knowledge". Vendors' low level of trust in clients' technical knowledge leads to undermined suggestions and feedback of clients during the project undertakings. Related to this, project manager of Client Y mentioned:

[...] when the developed system was presented to us for feedbacks with the prime objective of making the necessary modifications, the vendor prefers to attack our comments and suggestions. The vendor considered itself as more knowledgeable in the area. Being commented for further

modifications is not comfortable for the vendor. This was one of the main reasons for having a partial outsourcing success.

According to McAllister (1995), in exchanging relationships, partners' beliefs about each other's competence and reliability is crucial. When trust exists, partners might not openly challenge and resist each other's knowledge and advice (Jain, Sandhu and Goh, 2015). The exploratory study confirms that mutual trust influences successful transfer of knowledge between outsourcing partners.

Project-Related Factor

Project staff turnover: Staff turnover is another factor that affects knowledge transfer between Ethiopian ISO partners. When clients' project personnel leave in the middle of a contract, they take client-specific knowledge with them (Rottman and Lacity, 2008). Hence, clients face difficulties to properly maintain project-related documents and to follow-up with the project. The influence of project staff turnover on knowledge transfer is mentioned by project manager of Vendor C as:

There are cases that clients IS/IT staffs who were getting the necessary trainings at the very beginning of the project left the organization in the middle of the project activity. This made us to provide repeated trainings which is costly for us and affects project progress.

Project manager of Client Y supports the above response as:

[...] The IT unit head of the client organization is assigned as a client project manager. Documents related to the project such as signed contracts, documented requirements, and project reports were maintained by this manager. If this employee left the organization, access to these documents are problematic for the newly assigned individual.

Similarly, project personnel turnover at the vendor side causes disruptions in knowledge transfer. In this regard, project manager of Client W described:

Primarily, the vendor needs to alleviate its problem of experienced staff turnover. When a new individual is assigned in place of an experienced project team member, he/she needs too much time to know our needs and the project objectives. What our vendor did was sending its new staff to our organization to let him/her acquire the necessary business knowledge about the project.

Therefore, this research shows that project staff turnover hinders knowledge transfer between outsourcing partners. When trained and key project personnel left unexpectedly, they took project-specific knowledge with them and project activities were in jeopardy.

DISCUSSION

This study set out to address the questions of what key factors influence knowledge transfer in onshore IS outsourcing relationships and how. An exploratory semi-structured interview was used to address these questions. The results of the study identify five factors that influence knowledge transfer in ISO relationships from the client-vendor perspective. These include mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, mutual trust, and project staff turnover.

The findings indicate that mutual disseminative capacity is the main sources-related factor that affects knowledge transfer. Most of the knowledge related to clients' requirements and business processes and vendors' technical know-how and skills are tacit and embedded in practices (Alanne and Pekkola, 2015). As a result, outsourcing partners (if they lack disseminative capacity) might not be able to fully understand, completely articulate, and codify such tacit knowledge and transfer it between themselves (Tang, Jifeng and MacLachlan, 2010). In addition, Mu et al. (2010) argue that knowledge senders' interpretation and the way they communicate their knowledge has an impact on knowledge transfer success. High levels of disseminative capacity will provide opportunities for mutual understanding and cooperation so that partners will be motivated for the creation of new knowledge (Gupta and Govindarajan, 2000). It also enables the partners' ability to assess each other's knowledge base, determine the relevant knowledge to be transferred (Schulze, Brojerdi and von Krogh, 2014) and devise appropriate transfer mechanisms (Oppat, 2008). Moreover, partners with strong disseminative capacity will tend to be more effective in minimizing misunderstanding, thus helping them to transfer the relevant knowledge in a timely manner (Tang et al., 2010), and make the system development efficient (Nidhra et al., 2013). In ISO literature, there exists limited research on the effect of knowledge senders' disseminative capacity on knowledge transfer. Instead, a few studies examined the indirect effect of knowledge source encoding competence on knowledge transfer success (Ko et al., 2005; Xu and Ma, 2008). Thus, the findings of this study add to this body of knowledge about the importance of mutual disseminative capacity for knowledge transfer and onshore, as well as offshore, outsourcing success.

Regarding recipient-related factors, this study identified mutual absorptive capacity and mutual learning intent as key factors affecting knowledge transfer in onshore ISO relationship. Outsourcing partners with a high level of absorptive capacity are more likely to be effective in identifying and understanding new valuable knowledge, integrating a wide variety of knowledge in a flexible way, and utilizing the knowledge to accomplish project tasks and goals (Yoo, Vonderembse and Ragu-Nathan, 2011). Absorptive capacity can increase the volume of knowledge transferred between outsourcing partners (Roberts et al., 2012) and allow partners to negotiate and develop a shared understanding of the system, which leads to knowledge transfer success (Ko et al., 2005). Many studies investigate the relationship between absorptive capacity and knowledge transfer in IS outsourcing relationship. Empirical studies show that clients' absorptive capacity facilitates the transfer of knowledge from consultants in complex IS implementation environments (Ko et al., 2005; Xu and Ma 2008). Moreover, the case study conducted by Li et al. (2014) indicates that absorptive capacity is positively associated with knowledge transfer. However, earlier studies conceptualized and investigated absorptive capacity by focusing on either clients or vendors. One limitation of this approach is that it treats absorptive capacity as one party's ability for a successful transfer of knowledge. Contrary to this, effective knowledge transfer in ISO should consider the absorptive capacity of both clients and vendors. Consequently, the development of mutual absorptive capacity facilitates knowledge transfer between outsourcing partners and its success.

Learning intent is the other recipient-related factor that influences knowledge transfer in ISO. Due to knowledge asymmetry in ISO relationship (Bettis, Bradley and Hamel, 1992), clients and vendors need to collaborate and exchange the needed knowledge to perform outsourcing tasks (Lertpittayapoom, Paul and Mykytyn, 2007). As Zhao, Anand and Mitchell (2004) noted, knowledge transfer between two parties is a blend of teaching (source) and learning (recipient). During outsourcing activities, vendors and clients shift their role from that of a teacher to a learner. To develop IS successfully, vendors are supposed to learn about clients' business (Deng and Mao, 2012). Clients in return need to learn about the technical aspect of the new system, including its functionalities and use (Deng and Mao, 2012; Lertpittayapoom et al., 2007). If partners' learning intent is high, they will exert more effort and time

(Hamel, 1991) and allocate resources for learning (Hau and Evangelista, 2007). Partners with greater learning intent are more likely to observe each other's behavior to know what they are doing and how things are handled (Hau and Evangelista, 2007). All these activities would help outsourcing partners to acquire the required knowledge from each other (Hau and Evangelista, 2007; Ko et al., 2005). High level of partners' motivation to acquire knowledge from each other allows knowledge to be transferred faster (Hau and Evangelista, 2007; Pérez-Nordtvedt et al., 2008). Moreover, recipients' higher motivation to acquire knowledge from an external source can contribute to better psychological preparation to grasp the knowledge that is being transferred (Pérez-Nordtvedt et al., 2008). On the other hand, without the intent to learn, outsourcing partners might not succeed in attaining knowledge through learning (Hamel, 1991). While the importance of learning within the context of ISO has been discussed (Deng and Mao, 2012; Teo and Bhattacharjee, 2014), less attention has been paid to the effect of mutual learning intent on knowledge transfer success. Hence, this study finds that mutual learning intent facilitates the successful transfer of knowledge between outsourcing partners.

Besides the source and recipient-related factors, this study identifies mutual trust as an important relationship-related factor that impacts knowledge transfer. Lower level of mutual trust between outsourcing partners hinders knowledge transfer. When clients do not trust vendors' capability to complete the project and provide the required service quality, or when vendors are suspicious of clients' technical capability to contribute knowledge, the project suffers. As client and vendor depend on each other's knowledge for the project progress, the mistrust between them adversely affects knowledge transfer activities. This finding reinforces previous literature about the impact of trust on knowledge transfer. For instance, Lee, Huynh and Hirschheim (2008) argue that when there is trust between partners, they become more willing to cooperate and exert extra efforts for transferring the required knowledge. Empirically, trust between outsourcing partners is positively associated with knowledge transfer (Ko, 2014; Lee et al., 2008; Park and Lee, 2014). In his case study, Rottman (2008) also found a significant relationship between trust and knowledge transfer in an offshoring arrangement. While most of the previous studies investigated trust based on either vendors' or clients' perspective, this study's emphasis on mutual trust in ISO relationship is consistent with the findings of Ko (2014).

In this research, project staff turnover is also identified as a project-related factor that hinders knowledge transfer between outsourcing parties. Both clients and vendors experienced staff turnover during project activities. This caused disruptions in project-related knowledge transfer and hindered project progress. Therefore, knowledge retention mechanisms need to be devised by partners to overcome the knowledge gap created by staff turnover during an outsourced IS project.

CONCLUSIONS

This study has identified five factors that influence knowledge transfer in onshore ISO in Ethiopia. In addition, the study shows that each identified factor influences knowledge transfer in different ways. Given the significance of mutual (rather than one-sided) ISO benefits (Schwarz, 2014), it is important to know what facilitates or inhibits successful transfer of knowledge in ISO from the client-vendor perspectives. This is mainly because effective transfer of knowledge in ISO deals can lead to organizational success for the two parties (Hamid and Salim, 2011; Marchewka and Oruganti, 2013). This study has implications for research and practice with some limitations.

Implications for Research

The results of the study have at least three important implications for research. First, prior research was dominated by a one-directional knowledge transfer perspective typically investigating the transfer of

knowledge from vendors to clients. The underlying assumption was that clients are the main beneficiaries in ISO knowledge transfer. However, findings from this study suggest that knowledge transfer must be bi-directional and both ISO vendors and clients can be beneficiaries from effective transfer of knowledge. Second, although prior research has mainly focused on either the clients' or vendors' point of view to examine the factors affecting knowledge transfer, this study focuses on client-vendor perspectives and provides mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, mutual trust, and project staff turnover as common influencing factors of knowledge transfer in ISO relationships. Third, the study also contributes empirical insights about knowledge transfer challenges that onshore ISO partners in a developing economy encounter.

Implications for Practice

This study provides some useful insights to IS/IT managers of African countries to manage knowledge transfer successfully and drive business value. While many organizations in Ethiopia have been increasingly investing in ISO, they traditionally lack the understanding on how to manage inter-organizational knowledge transfer successfully. Methods to reverse this follow.

First, IT/IS managers of both clients and vendors need to recognize the value of knowledge and knowledge transfer in onshore ISO relationships. Outsourcing relationships offer clients and vendors the learning opportunity so that they can improve and develop their local technical capabilities. Therefore, the study encourages outsourcing practitioners to value knowledge that is to be transferred and received during their ISO relationships.

Second, this study identifies the key factors (mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, mutual trust, and project staff turnover) affecting knowledge transfer in ISO relationships. By paying due attention to these identified factors, outsourcing partners can facilitate knowledge transfer and increase ISO success. As knowledge sources, outsourcing parties must improve their disseminative capacity by assessing each other's knowledge gap, identifying the relevant knowledge to be transferred, and devising appropriate transfer mechanisms. Well-developed disseminative capacity is essential in requirements gathering, delivering technical training, and creating long-term partnership.

To successfully receive new external knowledge and maximize its benefits, both clients and vendors should develop their absorptive capacities. In this regard, client and vendor project managers should play a crucial role in ensuring the development of such capacity during the outsourced project. In addition to relying on formal and written knowledge transfer mechanisms, project managers should plan meetings following the signing of the contract. Regular meetings between client and vendor project teams can create a favorable environment to exchange, understand, assimilate, and utilize knowledge. Moreover, outsourcing partners need to see ISO deals as one means of acquiring new knowledge and skills and allocate the necessary resources that support learning from each another.

Additionally, to develop mutual trust between outsourcing partners, both vendors and clients need to undertake a proper due diligence before embarking on an outsourcing arrangement. The client needs to have enough information about the vendor's technical capabilities, financial strength and reputation. Equally important, the vendor is supposed to revise and properly understand the tender documents in order to have a clear picture of the client's needs and systems' requirements. As a result, the vendor can make a self-evaluation of its technical capability for proposing technical solutions to the client's business problem. Furthermore, to address the adverse impact of project staff turnover on knowledge transfer between outsourcing partners, vendors and clients should establish knowledge retention mechanisms.

Limitations and Direction for Future Research

This research is based on a limited number of interviews. The findings can only be generalized to theory and not to all types of ISO outsourcing relationships. Although the study has demonstrated the value of researching the mutual issues that both local vendors and clients face in ISO knowledge transfer, further research will be needed to extend this work both theoretically, as well as empirically. Theoretically, the nomological net of the factors that affect knowledge transfer could be extended to include mutual ISO success. Additional work that identifies the country and industry specific conditions that moderate the influence of the identified factors would also be one avenue to build on the framework of this research. Empirically, a quantitative study based on large sample size can be used to test the propositions developed in this research about the antecedent factors that affect knowledge transfer. Future studies can also focus to test if the nature of knowledge (such as knowledge tacitness, knowledge complexity) moderates the impact of mutual disseminative capacity, mutual absorptive capacity, mutual trust, and mutual learning intent on knowledge transfer.

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Appendix 1: Initial Themes/Patterns Generated Using NVivo 11

Nodes

Name	Sources	References
Dimensions of IS Outsourcing Success	10	38
Client Perspective	3	3
Client-vendor Perspective	8	14
Project Perspective	10	18
Vendor Perspective	1	1
Factors Affecting Knowledge Transfer	10	55
Client Perspective	9	30
Attitude Towards IS development Project Participatio	2	3
Availability of Domain Expertise	2	2
Basic Computer skills	2	2
Lack of Commitment	2	2
Lack of Knowledge on Why to Utilize IS	1	1
Marginalizing IS Staffs	1	1
Perceived In-house IS Development Capability	1	1
Staffs Turnover	5	7
Work Overload	1	2
Client-Vendor Perspective	10	28
Absorptive capacity	3	4
Collaboration	1	2
Disseminative Capacity	3	3
Knowledge Retention	6	9
Learning Culture	2	2
Learning Intent	3	3
Project Novelty	1	3
Reliance on Formally Written Knowledge	3	4
Top management Interference	1	2
Trust	6	7
Benevolence Trust	2	2
Competence Trust	5	6
Vendor Perspective	4	6
Availability of Specialized IS development personnel	2	2
Little Background or Business Knowledge	1	1