



**MODELING THE KNOWLEDGE FACTORS THAT EXPLAIN ONSHORE
INFORMATION SYSTEMS DEVELOPMENT OUTSOURCING SUCCESS
IN ETHIOPIA: A CLIENT-VENDOR DYAD**

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This is to certify that the thesis prepared by Solomon Abebe, entitled: Modeling the Knowledge Factors that Explain Onshore Information Systems Development Outsourcing Success in Ethiopia: A client-vendor dyad and submitted in fulfillment of the requirements for the Degree of Doctor of Philosophy (with specialization in Information Systems) complies with the regularities of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

Despite the increased organizational spending on Information Systems Development Outsourcing (ISDO), ensuring ISDO success and delivering business values from such initiative remains a challenge for business managers in a developing economy. In recent studies, there has been much interest in addressing the challenge from the antecedents and consequences of knowledge exchange between clients and vendors. However, a review of the literature on knowledge transfer and ISDO shows that most of the studies are (a) dominated by a one-directional knowledge transfer from or to one of the outsourcing parties; (b) focused on examining ISDO success from either the clients' or vendors' perspective, but not both; (c) focused on offshore ISDO context of developed economies. Although these earlier studies are useful, the direct transferability of the findings to the context of developing economy countries such as Ethiopia is questionable. This is because ISDO arrangements in a developing economy are characterized by an immature ISDO market. Client organizations lack experience in how to govern outsourced IS/IT initiatives and outsourcing partners usually demonstrate a lower level of awareness about the value of knowledge due to unsupportive knowledge transfer culture. Therefore, research that investigates mutual ISDO success by addressing the limitations of prior research and capturing the significant context of developing economy through the lens of sound knowledge-related theories is needed. Thus, this study is set out to address the following research questions: *(a) what are the key knowledge-related factors influencing onshore ISDO success? (b) how are these factors interrelated? and (c) to what extent do these factors contribute to onshore ISDO success?*

A review of the literature on ISDO, knowledge exchange, and ISDO success was conducted. Based on the findings from the literature, an exploratory study, and drawing from knowledge-based view and social exchange theories, a knowledge-based onshore ISDO success conceptual framework was developed from the client-vendor perspective.

This study was informed and guided by the positivist research paradigm. A mixed-methods research strategy particularly a sequential transformative mixed method was employed. The findings from the qualitative and exploratory study in Phase 1 were used as inputs in the development of the quantitative study in the second phase. Semi-structured interviews (10 project managers) and survey techniques were used to collect data in phases 1 and 2 respectively

from the onshore ISDO practices in Ethiopia. SmartPLS 2.0 M3 statistical tool was used to analyze the survey data, assess the reliability and validity of the measurement model, and test the hypothesized relationships in the proposed conceptual model.

The findings of the research show that onshore ISDO partners in a developing economy can deliver projects on time, increase their satisfaction with one another, and with the shared benefit and nurture long term partnership by (a) enhancing the utilization of knowledge transferred between vendors and clients; (b) developing their absorptive capacity, and (c) improving the effectiveness of knowledge exchange. To do so, the development of mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, and mutual competence trust between clients and vendors play a significant role and in turn, indirectly contribute to ISDO success. Furthermore, the results of the study indicate that knowledge transfer and absorptive capacity contribute to knowledge utilization in onshore ISDO relationships. The findings also show that knowledge utilization partially mediates the relationships between knowledge transfer and ISDO success and mutual absorptive capacity and ISDO success. The study's results further suggest that mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent facilitate knowledge transfer. Lastly, the results also confirm that in a bi-directional flow of knowledge, knowledge recipients' absorptive capacity necessitates mutual disseminative capacity, mutual learning intent, and mutual competence trust of outsourcing partners.

The research makes several contributions to ISDO research and practice. The overall findings indicate that taking the client-vendor dyads, instead of either a client or vendor perspective, offers a more complete picture of the knowledge dynamics that influence ISDO success. In terms of theory, the study contributes an onshore ISDO success framework to the ISDO literature in a developing economy. The utility of this framework is demonstrated as the research model explains 53.5% of the variance in onshore ISDO success. In addition, the study contributes sufficiently contextualized, and research-ready instruments to operationalize constructs such as mutual knowledge dissemination, mutual absorptive capacity, mutual learning intent, mutual competence trust, knowledge transfer, and utilization. Together, the framework and instrument may encourage future research.

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DEDICATION

I dedicate this thesis to my honored father-in-law the late Shiferaw Benti Seboka, who unfortunately couldn't wait to see when his son-in-law becomes a doctor.

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LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate
CITSRD	Communication and Information Technology Standardization and Regulation Directorate
ERP	Enterprise Resource Planning
GOF	Goodness of Fit
ICT	Information and Communication Technology
ICT-ET	Information and Communication Technology Association-Ethiopia
IS	Information Systems
ISD	Information Systems Development
ISDO	Information Systems Development Outsourcing
ISO	Information Systems Outsourcing
IT	Information Technology
IT DPRC	Information Technology Doctoral Program Research Committee
ITO	Information Technology Outsourcing
KBV	Knowledge Based View
KNOWTR	Knowledge Transfer
KNOWUT	Knowledge Utilization
MCIT	Ministry of Communication and Information Technology
MUAC	Mutual Absorptive Capacity
MUCT	Mutual Competence Trust
MUDC	Mutual Disseminative Capacity
MULI	Mutual Learning Intent
OLT	Organizational Learning Theory
PLS	Partial Least Squares
PLS-SEM	Partial Least Squares Structural Equation Modeling
RMT	Relationship Maintenance Theory
SCT	Social Capital Theory
SET	Social Exchange Theory
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

This research addresses how to enhance Onshore Information Systems Development Outsourcing (ISDO) success in Ethiopia by investigating the nomological network of knowledge-related practices from the client-vendor perspective. These practices include knowledge dissemination, absorption, learning, trust, transfer, and utilization.

The chapter is organized into seven sections. Section 1.1 briefly highlights the background of ISDO and knowledge factors that impact ISDO success. The motivation for conducting the research is presented in Section 1.2. Section 1.3 presents the statement of the problem. Section 1.4 illustrates the research objectives. Thereafter, a summary of the research approach and assumptions (Section 1.5) and the contributions of the research (Section 1.6) are presented. The chapter concludes with the organization of the overall thesis structure (Section 1.7).

1.1. Background

Information Systems Development (ISD) is an important organizational activity for strategic and operational purposes (Kappelman et al., 2020). ISD refers to “the analysis, design, and implementation of information system applications/systems to support business activities in an organizational context” (Xia and Lee, 2005, p. 46). Due to the highly competitive and rapidly changing business environment, organizations have been under great pressure to seek out strategies for the successful development of Information Systems (IS)¹ (Kappelman et al., 2019; Arenfeldt et al., 2017). One of the popular strategies devised by organizations is outsourcing, henceforth ISDO (Poletto et. al., 2020; Wang et al., 2018).

ISDO is a contractual agreement between an outsourcing organization (i.e., client) and an IS service provider (i.e., vendor) in which the client contracts out all or part of its ISD activities to the vendor within an agreed time, irrespective of where the vendor is located (Khan et al. 2011; Bergkvist and Fredriksson, 2008). On the other hand, onshore ISDO refers to a type of outsourcing relationship where the client contracts out all or part of its ISD activities to a domestic IS service provider (Abbott, 2013; Bergkvist and Fredriksson, 2008). Generally, ISDO

¹ In this study context, information system(IS) is used as a generic term that encompasses information technology, processes, data, and people.

is a well-established and accepted business practice for reducing operational costs while gaining business value (Bui et al., 2019; Sedera et al., 2014). According to KPMG (2017), in 2017, worldwide Information Technology Outsourcing (ITO) contracts worth USD 137.2 billion were signed. The growth rate of ITO is estimated to be 2.4% Compound Annual Growth Rate (CAGR) from 2017 to 2021 (Yan, 2018). Besides, a market survey by Gartner shows that ITO had contributed 60% to the worldwide Information Technology (IT) services market and is estimated to reach \$1.3 trillion in 2023 (Gartner, 2017).

A rising trend of ITO in many developing countries like India, China, Brazil, and Malaysia has also been observed in recent years. For example, India has a leading role in the global sourcing market with a 55% share (NASSCOM, 2018); China's ITO services market has a compound annual growth rate of 25.01% over the period 2013-2018 (Wang et al., 2018; Wu et al., 2016); the outsourcing sector in Malaysia recorded US\$ 3.22 billion revenue in 2012 (Sedera et al., 2014). On the other hand, the ITO market in Africa is projected to grow at a CAGR of around 7%, from 2016 to 2020 (Technavio, 2016). Nevertheless, Ethiopia has yet to reap the benefits of these advancements in the region (Lixi and Dahan, 2014). Despite the pervasiveness of ITO, many outsourcing deals have been reported unsuccessful (Wang et al., 2018; Mehta and Mehta, 2017).

Improving the success of outsourcing arrangements is one of the IS research strands over the past several decades (Yan, 2018; Lacity et al., 2017). Some studies focus on key determinants or drivers of IS/IT outsourcing decisions such as concentrating on core competencies, curbing operating expenses and reducing costs (Lacity et al., 2008); achieving economies of scale (Ketler & Walstrom, 1993); and improving the efficiency of ISD (Dibbern et al., 2004). Challenges/risks of ISO governance (Dibbern et al., 2008) and ISDO success measures or approaches (Petter et al., 2012; Long et al., 2005) are the other areas that draw the attention of researchers. Gaining access to external knowledge, expertise, and capabilities have become a strategic intent of ISDO in both private and public sectors (Mehta and Mehta, 2017; Sedera et al., 2014).

ISDO is a boundary-crossing mechanism through which the outsourcing partners can exchange valuable knowledge (Hamid and Salim, 2011; Liao et al., 2009). ISD is primarily a knowledge-intensive activity between the vendor and the client (Tiwana and McLean, 2005). The client has the knowledge related to the business needs that the new IS must fulfill. On the other hand, the

vendor-owned technical knowledge helps translate the client's specific business needs into an IS-based solution. However, the available knowledge by itself has little contribution to ISDO success unless this knowledge is effectively transferred between the outsourcing partners, combined to create new project-related knowledge, and utilized in the design and functionality of the IS (Philip and Schwabe, 2018; Tiwana, 2009; Holsapple, 2003). As a result, it is imperative to examine outsourced ISD processes and outcomes from the knowledge management perspective (Kweku et al., 2018; Lacity et al., 2017; Teo and Bhattacharjee, 2014). Knowledge management is a strategy that allows outsourcing partners to create, store, transfer, utilization, and renew knowledge to work faster and improve outsourcing performance (Dalkir and Liebowitz, 2011).

Although knowledge is one of the determinants of ISDO success (Lacity et al., 2017), successful management of knowledge-related activities is a challenging task in ISDO relationships (Bjornson and Dingsoyr, 2008; Lertpittayapoom et al., 2007) and influenced by different factors (Betz et al., 2014).

Prior studies demonstrate the impacts of knowledge-related factors on ISDO success (e.g., Brito et al., 2017; Madsen et al., 2015; Teo and Bhattacharjee, 2014). Thus, various models are proposed by IS researchers (e.g., McGuire et al., 2015; Teo and Bhattacharjee, 2014; Ko, 2014). While these studies are useful, their transferability to the context of a developing economy like Ethiopia is questionable for the following key reasons:

- **Differences in ISO maturity:** previous research on ISDO arrangements is predominantly conducted on developed economies' perspectives where both the outsourcing markets and knowledge experience are relatively matured when compared with that of developing economies. Thus, in the developing economy context, both assumptions are challenging because of the immaturity of the outsourcing industry (Lixi and Dahan, 2014; Biru, 2008),
- **Differences in the perceptions of the value of knowledge:** although organizations have a different set of reasons for acquiring and transferring knowledge (Mustak, 2019; O'Dell and Grayson, 1999), the benefits and values delivered from the acquired and transferred knowledge depend on organizational knowledge management maturity (Mustak, 2017),
- **Differences in the culture of knowledge transfer:** each organization has a unique culture reflecting the values and norms held by its employees (Al-Alawi et al., 2007; Tseng, 2011).

This culture plays a crucial role in encouraging employees to share their knowledge and experiences at the intra or inter-organization level (Stojanovic-Aleksic et al., 2019; Kayas and Wright, 2018; Tseng, 2011). As organizations have a different culture to accomplish their knowledge transfer initiatives (Allameh et al., 2010), studying knowledge transfer within the context of a developing economy is essential.

Therefore, models and frameworks that are proven to work very well for developed economies might not be readily applicable to developing economies (Roztocki and Weistroffer, 2009; Heeks, 2002). Thus, addressing the issue by examining the current state of knowledge-related practices in onshore ISDO concerning a developing economy context in general and Ethiopia, in particular, is imperative.

1.2. Motivation for Conducting the Research

Despite the widespread availability of commercial-off-the-shelf software and cloud-based SaaS offerings, the overall IT budgets on software development and outsourcing have risen from 2015 to 2018 (Kappelman et al., 2019). Moreover, there appears to be a major shift toward domestic outsourcing while the number of IS projects undertaken by offshore outsourcing means increases (Kappelman et al., 2019). The stakes are high for ISDO practitioners to materialize the expected benefits; thus, the situation calls for further study on how practitioners can ensure a successful ISO relationship.

In spite of the popularity of ISDO, a higher rate of ISDO failures is reported both in Ethiopia and other developing countries (Beyene et al., 2015; Kalema et al., 2014; Abbott, 2013). Nevertheless, business managers have continued to increase their ISDO investments (McGuire et al., 2015; Schwarz, 2014).

In addressing ISDO failures, earlier studies mainly focused on either ISDO clients or vendors in developed countries (Teo and Bhattacharjee, 2014; Williams, 2011) while a little research is devoted to developing countries (Kweku et al., 2018). Even though some attempts were made to study knowledge factors affecting offshore ISDO success in the context of developing countries (e.g., Aziati et al., 2013; Deng and Mao, 2012), the impact of knowledge-related factors on onshore outsourcing relationship is under-researched (Kweku et al., 2018). This gap needs to be addressed due to the key roles of local vendors in fulfilling the information systems needs of the developing 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 201.5 million US dollars (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. Besides the government, private organizations such as higher learning institutions are also the main actors in the onshore ISDO arrangements of Ethiopia (Beyene et al. 2015; Dameria, 2011). Hence, this lack of knowledge and research demands additional investigation of the phenomenon in a developing country context to improve onshore ISDO success from the knowledge management perspective.

1.3. Statement of the Problem

This study addresses three inter-related problems of onshore ISDO in a developing economy context – (a) failure of many ISDO arrangements (Beyene et al., 2015; Kalema et al., 2014), (b) the insufficient transfer of knowledge between ISDO clients and vendors and one critical shortcoming in previous studies, that is, the dominance of a one-way transfer of knowledge in outsourced IS projects (McGuire et al. 2015; Teo and Bhattacharjee, 2014), and (c) successful inter-organizational(i.e., outsourcing relationship) knowledge transfer, absorption, and utilization is problematic, affected by many factors (Betz et al., 2014; Bjornson and Dingsoyr, 2008).

Although ISDO is one of the known business strategies, outsourced IS projects are not always successful. For example, the study of Nuwangi and Sedera (2018) showed that outsourced ISD projects failed to provide agreed deliverables within the anticipated time and budget. According to the authors, such projects' failures are due to the inability of outsourcing partners to identify the knowledge requirements and expected outcomes of the new IS to be developed. Outsourcing service providers' failure to deliver expected services to their clients is also reported in Wang et al. (2018). According to Alanne and Pekkola (2015), vendors have difficulties recommending new ideas or alternative solutions to the client's business problems due to their limited knowledge of the client's business environment. The authors added that the technology behind the new system can't be exploited to its full potential in the client's business environment. As Horvath (2014) indicated, 60% of client organizations that were surveyed did not achieve their pre-defined targets from their outsourcing arrangements. In another study conducted at a global software outsourcing marketplace by Jørgensen (2014), 50–80% of outsourced software projects

failed to deliver the specified products, went over budget, or unmet their schedule. In an emerging economy, for example, China, offshored ISD projects encountered schedule slippage by 24% and cost overrun by 27% on average (Deng and Mao, 2012). In general, by taking the four years software development projects' data (from 2011–2015), the Standish Group Chaos Report (2015) indicated that projects were not completed on-budget (56%), on-time (60%), and on-target (44%). Moreover, other failure reports show that more than half of ISD projects are unsuccessful (Jenkin et al., 2019; Hughes et al., 2017). One of the reasons for ISDO failures is the lack of a comprehensive understanding of the knowledge factors impacting ISDO success (Nuwangi and Sedera, 2020; McGuire et al., 2015; Teo and Bhattacharjee, 2014).

ISO failures are also common in developing countries' context (Kalema et al., 2014; Beyene et al., 2015). In these countries, ISD projects face problems of scalability (i.e., they may not be extended to form full-fledged IS) and failure to fully support the redesigned business processes (Kassahun, 2012; Avgerou, 2008). These findings offer anecdotal evidence that suggests vendors have limited understanding or inadequate knowledge of the client's business process during the development of the system. Without the adequate transfer and integration of the client's business and domain knowledge and vendor's technical knowledge, the client-specific knowledge cannot be successfully leveraged in the ISD process and the final IS product (Hamid and Salim, 2011). In other words, the lack of knowledge-related capability in dyadic relationships will partly contribute to the failure of ISDO projects (Philip and Schwabe, 2018; Teo and Bhattacharjee, 2014; Betz et al., 2014).

Likewise, ISDO practices in Ethiopia show that outsourcing partners are not achieving the desired benefits from their ISDO deals. Client organizations report their dissatisfaction because of their difficulties to utilize the newly implemented systems (Kassahun, 2012; Biru, 2008) and the delivery of unused software products (Biru, 2008). Similarly, vendors face difficulties to deliver the promised high-quality software products due to unclear or incomplete requirements of clients (Biru, 2008). From these failure reports, it can be argued that the required knowledge is insufficiently transferred between the outsourcing partners during the IS development tasks. Successful transfer of the necessary knowledge between the client and the vendor can lead to better requirements definition, and improved vendor's capability to deliver the project on time, budget and with the required quality (Gregory et al., 2009; Aundhe and Mathew, 2009; Chuan and Pan, 2008). Similarly, it can help clients to effectively utilize and maintain the newly

implemented IS (Wang and Gan, 2010). Overall, the success of outsourced ISD projects is dependent on the knowledge capabilities of outsourcing partners to effectively transfer, receive, and utilize knowledge for outsourcing tasks (Gantman and Fedorowicz, 2020; Teo and Bhattacharjee, 2014; Subasingha et al., 2012).

Prior research examined a range of knowledge-related antecedents impacting ISDO success either from the client (e.g., Teo and Bhattacharjee, 2014; Liao et al., 2009) or the vendor perspective (e.g., Nuwangi and Sedera, 2020; Su and Mao, 2013; Deng and Mao, 2012). However, a successful ISO outcome is determined not by the client or the vendor, but by both. The client mainly possessed business knowledge (e.g., business processes, business rules, policies, and procedures) (Chang and Parikh, 2006) and expected to transfer it to the vendor and receive technical knowledge from its vendor. Similarly, the vendor primarily owned IS technical knowledge for developing the new system (e.g., software architecture, design patterns, programming, and ISD processes) (Xu and Ma, 2008; Pee et al., 2007). As a result, the vendor needs to transfer the necessary technical knowledge about the use and technical capabilities of the new system to the client. Besides, the vendor is the receiver of business knowledge from the client that guides the design and development of the new IS. Hence, it is necessary to investigate ISDO success from a dyadic perspective to understand exhaustively the knowledge factors affecting onshore ISDO success. According to Mustak (2019), studying the success of a knowledge-intensive ISD project from a dyadic perspective can lead to enhanced value outcomes for both parties. ISDO is for mutual rather than one-sided benefits and its success needs to be seen from this perspective (Schwarz, 2014; Koh and Straub, 2004). Nevertheless, little attention has been given by prior research to identify the impact of knowledge factors on onshore ISDO success at the dyadic level by considering the views of both clients and vendors. In sum, due to the two-way flow of knowledge in the ISDO relationship and the interchangeable roles played by the outsourcing dyads (i.e., as a knowledge source and a knowledge receiver), the dominant one-sided view of the earlier studies has limitation to provide a comprehensive understanding of ISDO success and the key knowledge factors affecting success.

Given the continued failure reports of ISDO projects and the complex nature of ISDO success, there is a need for further empirical research to propose a model that explains the relationship between knowledge factors and onshore ISDO success from the client-vendor dyads by using

relevant theories; namely, Knowledge-Based View (KBV) and Social Exchange Theory (SET). According to Blaskovich and Mintchik (2011) and Dibbern et al. (2004), a single theory has limitations to fully explain complex phenomena such as knowledge and ISDO success. Accordingly, the adoption of two theories is an optimal lens for studying the knowledge factors and ISDO success (Qi and Chau, 2015; Blaskovich and Mintchik, 2011).

1.4. Research Questions

This research seeks to contribute to IS research by modeling and investigating mutual ISDO success from knowledge-related capabilities of the dyads. Hence, the purpose of this study is to examine mutual onshore ISDO success from the knowledge factors perspective in a client-vendor dyadic relationship. Therefore, the main research question is:

- *How do knowledge-related factors contribute to onshore ISDO success?*

In addressing the primary research question, the study attempts to answer the following three sub-questions:

- *What are the key knowledge-related factors influencing onshore ISDO success?*
- *How are these factors interrelated?*
- *To what extent do these factors contribute to onshore ISDO success?*

1.5. Objectives of the Research

The objective of this study is to develop a dyadic knowledge-based model that explains mutual onshore ISDO success. To address the research objective, the following main activities are performed in the course of the research.

- Undertake a literature review of ISDO to identify knowledge-related factors that might influence its success,
- Conduct an exploratory study to verify the insights obtained from the literature that make up the conceptual framework and identify additional insights from its findings,
- Develop a knowledge-based onshore ISDO success framework,
- Identify the constructs and nomology that make up the framework,
- Develop a survey instrument for the constructs,
- Administer a survey to examine the reliability and validity of the survey instrument and validate the theoretical model,

- Contribute to IS research in general and the ISDO literature in developing economies, in particular, an empirically validated dyadic ISDO success model and associated measurement instruments,
- Provide a set of guidelines to Ethiopian ISDO clients and vendors to maximize their ISDO success.

1.6. Research Approach and Assumptions

This study is conducted with the positivist epistemological and ontological paradigm. A mixed-methods research approach specifically a sequential transformative strategy was used to develop and empirically test the model. Then, in order to test the hypotheses, the quantitative field study was conducted using a survey method.

The empirical data required for the study are collected from project managers or individuals with an equivalent title who oversaw the managing of these projects. Project managers are assumed to be the key respondents to provide relevant data for the survey questions. Moreover, data were collected from Ethiopia as the research explored the research questions in a developing economy context. According to The World Bank's (2018) and WESP's (2019) classifications, Ethiopia is placed within the 'developing economies' category. As a result, the classification made by these bodies is assumed to be acceptable without additional investigation. Data from 150 projects were collected using a self-administered questionnaire involving 135 clients project managers and 130 vendors project managers. SmartPLS 2.0 M3 statistical tool was employed to assess reliability and validity and to test the hypothesized relationships in the proposed model.

1.7. Contributions of the Research

This study has contributions to the theory, methodology, and practice of onshore ISDO. First, it presents an extensive review of the literature on ISDO success from a knowledge-based perspective of a developing economy; it establishes the gap in the existing body of knowledge. Second, this study bridges the gap in the information systems literature in Ethiopia by offering an empirically validated novel, comprehensive knowledge-based dyadic onshore ISDO success model. Third, the results of this study uniquely contribute to the ISDO literature in Africa by providing empirical evidence about how onshore ISDO success is maximized by mutually enhancing both clients' and vendors' knowledge-related practices.

Fourth, unlike prior IS studies that examined determinants of ISDO success either from the client or the vendor perspective, this study is conducted from the client-vendor perspective and its findings demonstrated that knowledge utilization and mutual absorptive capacity are the key determinants of mutual onshore ISDO success. Fifth, this study emphasizes a bi-directional knowledge transfer and it is the first to empirically demonstrate that compared to mutual absorptive capacity, knowledge transfer has a greater contribution to successful knowledge utilization in onshore ISDO by increasing the amount of knowledge transferred between outsourcing partners. Sixth, it provides a comprehensive and better picture of the key influencing knowledge factors in the onshore ISDO relationship as the study considered both the knowledge source and the knowledge recipient simultaneously. As a result, the study's findings indicated that not only does the mutual disseminative capacity of the knowledge sources affect knowledge transfer, but also mutual absorptive capacity and mutual learning intent of the knowledge recipients affect successful knowledge transfer.

Seventh, this study has an original contribution to IS and knowledge management literature as it empirically showed that mutual disseminative capacity, mutual learning intent, and mutual competence trust have significant positive effects on mutual absorptive capacity in onshore ISDO relationship. Eighth, the study has also a methodological contribution as it is the first attempt at measuring and assessing dyadic level constructs including mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, and mutual trust. Finally, it identified the key lessons for developing economies and particularly for those engaging in onshore ISDO arrangements.

1.8. Organization of the Thesis

The remainder of the thesis is organized into seven chapters. The remainder of the thesis is organized into seven chapters. The second chapter presents a review of relevant background literature, drawing from ISDO, knowledge management literature in general, and Knowledge management in ISD outsourcing literature. The chapter covers ISDO definition, ISDO delivery models, ISDO success indicators, current trends in ISO arrangements, knowledge management in general, and ISDO in particular. Chapter 3 provides details of the methods, techniques, and tools employed for conducting the exploratory study, as well as its findings. It then offers the conceptual research model and develops the testable hypotheses by identifying and better

conceptualizing the relevant constructs of the study using the findings from the exploratory study, KBV, and SET theories.

Chapter 4 focuses on the research methodology in general. The chapter starts by highlighting the different research paradigms and basic assumptions that guide and inform scientific research. Then, the discussion covers justifications of the selected research paradigm, research approach, sample design, instrument development, the data collection and analysis procedures, and the key ethical considerations involved in the conduct of the quantitative study.

Chapter 5 reports data examination and preparation for doing the quantitative data analysis by stressing the handling of missing data. The chapter also provides a brief discussion of the calculations of the scores of each item of constructs with general and multiplicative measures and the computations of the scores of each item of dyadic level constructs.

Chapter 6 deals with quantitative data analysis and provides a discussion of the various statistical tests including convergent validity, internal consistency reliability, and discriminant validity of the construct measures. The chapter also covers the discussion of tests of path coefficients, individual R squared values, the relationships among constructs, and the model's predictive capabilities.

Chapter 7, on the other hand, presents a discussion of the key findings of this research. Finally, Chapter 8 provides an overall conclusion of the study by summarizing the research questions that were initially posed and the research activities carried out for answering the research questions and providing a discussion of the key findings in a way that answers the research questions. It also briefly outlines the contributions, limitations, and areas for further research. The chapter concludes by providing concluding remarks.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The first chapter highlighted the background and the general structure of this study. This chapter focuses on a detailed review of three domains of literature that are relevant for the current study: (1) information systems development outsourcing; (2) knowledge management in general; and (3) knowledge management in ISDO context including those that focus on developing economies.

The remaining part of this chapter is organized into seven sections. Section 2.2 to Section 2.7 provide a review of ISDO in general and Ethiopia in particular. Section 2.8 deals with the conceptual discussion of knowledge and knowledge transfer. Section 2.9 offers a critical review of ISDO research conducted from the knowledge management perspective. The last section (Section 2.10) summarizes this chapter.

2.2. Information Systems Development Outsourcing (ISDO) Definitions and Models

As briefed in chapter one, information system is used as a generic term that includes information technology. Before defining ISDO, it essential to provide further details about the distinction between information system and information technology.

In information system literature, the term information system is defined in different ways. In this paper, information system is defined as an arrangement of people, data, processes, and technology that interact for the purpose of enhancing organizational goal's attainment, increasing organizational ability to coordinate its activities regionally, nationally, and globally, and enabling an organization to gain a competitive advantage (Watson, 2014; Watson, 2007). In this definition, important terms are included and they need to be clarified. These include people, data, process, and technology. People refer to all those individuals of the organization who are directly involved with the system. The data are facts that represent the system being studied and the different resources. The process, on the other hand, refers to an activity or an operating procedure that determines how things are executed and who does what. By technology, it is meant for information technology and it refers to the arrangement of computer technology (hardware and software) and communication technologies to convert, store, protect, process, transmit, and retrieve information in the organizational context (Watson, 2007).

The literature review shows that there exist different definitions and varieties of ISD outsourcing terms. For instance, Lacity et al. (1996) define outsourcing as a company's decision to transfer IT assets, employees, hardware leases, software licenses, and management responsibility to third-party vendors. Alternatively, IT outsourcing is described by Hirschheim and Lacity (2000, p. 99) as "the practice of transferring IT assets, leases, staff, and management responsibility for delivery of services from internal IT functions to third-party vendors". Grover et al. (1998) define IS outsourcing as the delivery of part or all of IS functions to external service provider (s) in order for achieving an organizational goals. However, these definitions reflect the client's perspective. The definition given by Bergkvist and Fredriksson (2008) tries to provide a broader view of outsourcing by including the vendor's perspective as well. Accordingly, they described ISD outsourcing as a generic term and defined it as "a joint decision to sign a contract which stipulates that the IT-supplier should perform ISD activities for the client over an agreed time period, irrespective of where the IT supplier is located" (p. 7). From both the client's and vendor's perspective, Khan et al. (2011, p. 1) also define software development outsourcing as "a contract-based relationship between client and vendor organizations in which a client contracts out all or part of its software development activities to a vendor, who provides agreed services for remuneration". Given the significance of mutual benefits in an ISDO relationship, conceptualization and measures of ISDO success need to include the perceptions of both the client and the vendor (Schwarz, 2014; Koh et al., 2004). Thus, in this research, ISDO is defined as a contractual agreement between client and vendor organizations in which the client contracts out all or part of its ISD activities to the vendor within an agreed time (Khan et al., 2011; Bergkvist and Fredriksson, 2008).

There exists different categories of ISO in the outsourcing engagements. As depicted in Table 2.1, Kappelman et al. (2020) identify the top ISO categories and rank them in terms of their dominance in the global ITO market.

According to Valorinta (2010), application development, application maintenance, systems operations, hardware maintenance, network, end-user support and data centers are the main outsourced IS functions. Moreover, website/e-commerce, hosted applications, outsourcing of disaster recovery services, large packaged applications (such as ERP and enterprise systems) are identified as the different categories of ISO (Sedera et al., 2014; Subasingha et al., 2012).

Table 2. 1 Top ISO Categories in year 2019

ISO Category	Rank
Software & Application Development, Maintenance, Support, & Programming	1
Data Center, Infrastructure, IT Operations	2
Cyber security/IT Security	3
Help Desk/Service Desk	4
Software/System Testing & Quality Assurance	5
Network Administration & Management	6

Source: Adopted with modification from Kappelman et al. (2020)

2.3. ISDO Delivery Models

Once an outsourcing organization decides to outsource part of its IS functions, a suitable ISDO arrangement needs to be selected to realize the expected benefits from the ISDO relationship. By taking geographic distance into consideration, there are various but related ISDO delivery models (e.g., Demirbas et al., 2018; Abbott, 2013). The common ones include: ISD Onshore outsourcing/ Onshoring, ISD Offshore Outsourcing/Offshoring, and ISD Near-shore Outsourcing/ Nearshoring.

ISD onshore outsourcing refers to "contracting with a third party who is situated in the same country as the client organization for the completion of a certain amount of work, for a specified length of time, and at a certain cost and level of service" (Oshri et al., 2009). In other words, the outsourced IS function (e.g., customized software development, systems integration, or legacy system maintenance) is undertaken by an external domestic provider (Demirbas et al., 2018). In this delivery model, client and vendor organizations are in close geographic proximity. As a result, it alleviates the common problems in offshore outsourcing arrangements such as cultural, language, and time zone differences (King and Torkzadeh, 2008; Ranganathan and Balaji, 2007).

On the other hand, ISD offshore outsourcing is described as "the performing of IS-related work by a third party organization from a location that is geographically and culturally distant from the host organizations prime's locations" (Avison and Banks, 2008, p. 249). Similarly, Demirbas et al., (2018, p. 4) define offshore outsourcing as "the production or provision of a product or service is outsourced to a low-wage country, which is far away in terms of distance and time-

zones". Exemplary for an offshore is outsourcing from Ethiopia to India. In general, Countries such as India, China, Ireland, Israel, Malaysia, Hungary and the Philippines are the major destinations for offshoring. Unlike onshore outsourcing, offshore outsourcing poses additional challenges and calls for a distinct set of capabilities to deal with (a) language barriers, cultural issues and time zone differences, (b) vendor's opportunistic behavior and the associated risks, and (c) data security and privacy issues (Ranganathan and Balaji, 2007).

Lastly, in ISD near-shore outsourcing delivery model, which is a variant of offshoring, a client organization outsources its IS functions to a vendor located in its close proximity (Abbott, 2013). According to Demirbas et al., (2018, p. 4) near-shore refers to "the production or provision of a product or service is outsourced to a low-wage country which is close in terms of distance, culture and legal system". Compared to offshoring, nearshoring provides benefits like lower travel costs, fewer time-zone differences, and closer cultural compatibility (Oshri et al., 2009). Exemplary for a nearshore is outsourcing from US to Canada. Therefore, understanding the core of each outsourcing delivery model is vital for clients to engage in effective outsourcing relationships.

2.4. ISO Context of Ethiopia

Ethiopia has yet to find mention in the global services location index compiled by AT Kearney (2019) in terms of its global outsourcing attractiveness. Rather, the local IT industry and outsourcing market are immature and the country lacks a competitive skills base that meets outsourcing and the local ICT industry demands (Lixi and Dahan, 2014). According to Biru (2008), software development firms of Ethiopia lack competence in project management and soft-skills. Basing, location readiness index (LRI) assessment, Lixi and Dahan (2014) also indicate that Ethiopia lacks a competitive talent pool to meet the demands from IT and BPO industries. Fortunately, Ethiopia has a specialized talent pool in mathematics which will provide a good opportunity to advance its domestic software development and ITO/BPO sectors (Abbott, 2013).

There are no dependable historical data related to the total spending made on the local IS/IT outsourcing market in Ethiopia. On the other hand, there has been an increase in the number of companies engaged in domestic software development and ISO sectors (Biru, 2008; Lixi and

Dahan, 2014). According to Lixi and Dahan (2014), around 200 companies were estimated to specialize in IT-based services in the year 2014. The data obtained from the database of ECITSRD (in the year 2016) showed that 382 software development companies operating in Ethiopia and most are relatively young and small.

Although the outsourcing industry of Ethiopia is immature, most software development projects are undertaken by outsourcing means (Biru, 2008; Lixi and Dahan, 2014; Beyene et al., 2015). For example, in the e-government initiatives of Ethiopia, there are 219 IS development projects (MCIT, 2011; Lixi and Dahan, 2014) undertaken by outsourcing means. These projects were involving the development of multiple applications packaged together for use by various government ministries and agencies geographically scattered nationwide. In particular, the e-government initiatives of the Ethiopian Government aimed at improving and facilitating the efficiency and effectiveness of government services delivery to customers (residents, businesses, and visitors). Besides, outsourced custom-developed application projects are common and they targeted to address the specific requirements of user organizations (private or public).

As to the government's effort in the ICT and outsourcing sectors, the Government of Ethiopia has been showing its commitment by constructing the EthioICT-Village to attract and encourage IT service companies to get involved in BPO and stimulating the growth of the domestic IT industry (Adam, 2012). The EthioICT-Village is aimed at providing a wide range of services such as high-speed broadband connectivity, incubation facilities, data centers, and consultancy services. Moreover, the Ethiopian government has drafted a National ICT policy to create a favorable environment for the private sector involving in the business of software development and IT services.

2.5. Current Trends in ISO

There are a number of noticeable changes in the IS/IT outsourcing arena. First, the strategic intent of ISO has shifted to get access to external expertise, knowledge, and capabilities (Mehta and Mehta, 2017) and mutual learning (Arenfeldt et al., 2017). Second, the main focus of IS outsourcing investment has considerably moved from cost reduction to business value creation such as improved service quality, speedy access to market, and creating customer value (Wang et al., 2018).

Third, there are changes to the nature of jobs outsourced as organizations increasingly consider outsourcing for innovation and competitive advantages (Mehta and Mehta, 2017). Fourth, public sector organization has also become a key player in the IS outsourcing market (Hamid and Salim, 2011; 2014; Moon et al., 2014). Fifth, a large number of organizations tend to prefer smaller contracts of shorter duration with multiple vendors that deliver interdependent IT products and services to large-scale long-term contracts with a single vendor (Sedera et al., 2014).

Lastly, ISO strategy has been impacted by the advancement of innovative digital technologies. Cloud computing technology is one of these technologies that created changes in ISO strategy (Kappelman et al., 2020; Demirbas et al., 2018). Consequently, Software as a Service (SaaS) has become an emerging outsourcing delivery model that enables software applications to be delivered via an Internet connection on a subscription basis (Kappelman et al., 2020). SaaS providers play the role of outsourcing vendors who offer contractual services to their clients including application software's maintenance, customization, and updating (Satyanarayana, 2012). This model is a cost-effective solution to the client as it saves its IT investment on infrastructure, networking, hardware, software, and personnel costs (Zhong and Myers, 2016). Moreover, it also allows SaaS providers to support multiple users with a single version of a software product (Karaseva and Seffah, 2015). Despite the benefits of cloud-based IT services and solutions, the growth and widespread utilization of SaaS in the business world is challenged by the lack of a unified industrial standard for SaaS development and security issues of business data and transactions (Hui and McLernon, 2019; Satyanarayana, 2012). In conclusion, the current research focuses on knowledge-related practices of partners during their ISO relationship, which in turn have impacts on ISO success.

2.6. ISO Success Indicators

Earlier studies measured ISO success in different ways (See Table 2.2). For instance, from the clients' perspective, Grover et al. (1996) describe outsourcing success as the attainment strategic (e.g., increased concentration on core business and increase in IT-based innovations), technological (e.g., improved IT infrastructure and acquisition of new technology), and economic benefits (e.g., increased financial flexibility and reduced IT expenditure) through outsourcing activities. By extending Grover et al.'s model of outsourcing success, Lee and Kim

(1999) introduced the business perspective (which includes technological, strategic, and economic benefits) and user perspective as dimensions of outsourcing success. Additionally, overall satisfaction is integrated into ISO success definition (Dahlberg and Nyrhinen, 2006; Qi, 2012).

As ISO has continued to mature and sophisticate, the focus of outsourcing success has changed. For example, Goo et al. (2008) defined three categories of outsourcing success: technological, strategic, and functional benefits. Focusing on the client's view, Schwarz (2014) defines ISO success as the acquired additional capabilities, the achievement of objectives on time, improved quality, the received financial benefits, flexibility of contracts to accommodate changing circumstances/needs, development of a mutually beneficial relationship, mutual satisfaction, and achievement of service-level agreements. Gupta and Sushil (2014) proposed three dimensions of outsourcing success based on the vendors' perspective: financial, market and knowledge benefits.

By taking the vendors' views into account, Deng and Mao (2012) suggest that project quality and cost control are indicators of ISO success. The study conducted by Xu and Yao (2013) also focused on vendors' perspective of success and their finding show that product quality and process efficiency constitute the dimensions of outsourcing success. According to the authors, product quality refers to the quality of final product in meeting the client's requirements and process efficiency to the delivery of the project within the budget and time. Taylor (2007) identifies project outcome success, project process success, and commercial environment success as IT outsourcing success indicators of vendor firms.

Summarizing the above researchers' work, ISO success can be viewed as a multi-dimensional construct consisting of strategic, economic, technological, social (e.g., improvement of service quality and user satisfaction) and relational benefits (e.g., creating long-term relationships and satisfaction with the relationship) and overall satisfaction. The different works, moreover, indicated the importance of considering the multiple dimensions ISO success to have a bigger picture of the concept.

Table 2. 2 Overview of ISO Success Dimension

Dimension of Success	Reference	Remark
<ul style="list-style-type: none"> • Strategic benefits • Technological benefits • Economic benefits 	Grover et al. (1996)	-
<ul style="list-style-type: none"> • Technological benefits • Strategic benefits • Economic benefits 	Lee and Kim (1999)	Business Perspective
<ul style="list-style-type: none"> • Service Quality 		User Perspective
<ul style="list-style-type: none"> • Overall Satisfaction 	Dahlberg and Nyrhinen (2006), Qi (2012)	-
<ul style="list-style-type: none"> • Project Outcome Success • Project Process Success • Commercial Environment Success 	Taylor (2007)	Vendor Perspective
<ul style="list-style-type: none"> • Technological benefits • Strategic benefits • Functional benefits 	Goo et al. (2008)	-
<ul style="list-style-type: none"> • Project Quality • Cost Control 	Deng and Mao (2012)	Vendor Perspective
<ul style="list-style-type: none"> • Product Quality • Process Efficiency 	Xu and Yao (2013)	Vendor Perspective
<ul style="list-style-type: none"> • Financial benefits • Market benefits • Knowledge benefits 	Gupta and Sushil (2014)	Vendor Perspective
<ul style="list-style-type: none"> • Technological benefits • Benefits to the IT Function • Benefits to the Organization • Relationship Quality 	Schwarz (2014)	Client Perspective
<ul style="list-style-type: none"> • Operational performance • Strategic performance 	Teo and Bhattacharjee (2014)	Client Perspective

However, prior studies have given less attention to empirically examine ISO success dimensions that capture both client and vendor perceptions of success (i.e., mutual ISO success). According to Schwarz (2014), ISO success dimensions need to include the perceptions of both clients and vendors and its success need to be assessed in terms of achievement of mutual (rather than one-

sided) benefits. Hence, drawing from literature, ISDO success is conceptualized as the overall mutual organizational benefits obtained from ISDO by outsourcing partners (Lee, 2001; Qi and Chau, 2012). These include product quality, achievement of project objectives on time, benefits to the organization (including strategic, economic, business practice creativity, and social benefits), relationship quality (including user satisfaction, satisfaction of partners with their interaction, and intention to continue the outsourcing relationship), and overall satisfaction.

2.7. Review of ISO success Perspectives

In ISO literature, the concept of ISO success has been examined from economic, social, and knowledge and learning perspectives (see Table 2.3 for summary). Besides, a brief highlight of each of these perspectives is given in the following sub-sections (Sections 2.7.1-2.7.3).

2.7.1. Economic Perspective

Economic theories examine ISO relationships from the perspective of efficiency, coordination, and governance of economic transactions between outsourcing partners (Leimeister, 2010; Goo et al., 2007). The most commonly used economic theories to understand the ISO phenomenon is transaction cost economics (TCE), relational governance (RG), and agency theories (Grover et al. 1996; Taylor, 2007; Subasingha et al., 2012). These theories view ISO decision and its success from increasing organizational efficiency, improving operations, and reducing costs angles. However, measuring outsourcing success from cost savings is not recommended in the current business value creation-oriented outsourcing environment (Wang et al., 2018).

2.7.2. Relational Perspective

Various theories have been used to understand and explain the relational aspects of ISO. These include social exchange (e.g., Lai et al., 2009), social capital (e.g., Tsai, 2000; Lambe et al., 2001), relational exchange (e.g., Goles and Chin, 2002), and social interdependency (Kern, 1997) theories. These theories pay heed to the client-vendor interactions and exchanges to better understand the structure, continuing interactions, and conclusion of ISO relationship (Leimeister, 2010).

Table 2. 3 Summary of Key ISO Success Perspectives

	Main Perspectives in IS Outsourcing Success Research		
	Knowledge and Learning	Relational	Economic
Main argument	Effective knowledge transfer results in high ISO success.	Social capital and interdependency between vendors and clients influences ISO success.	Perceptions of risk and uncertainty affect ISO success.
Informing theories with seminal references	<ul style="list-style-type: none"> • RBV (Bamey,1991); • KBV (Davenport and Prusak, 1998; Grant,1996); • OLT (Huber, 1991). 	<ul style="list-style-type: none"> • SET (Lambe et al., 2001); • SCT (Lai et.al., 2009; Tsai, 2000); • Social Interdependency Theory (Kem, 1997). 	<ul style="list-style-type: none"> • Agency Theory (Jensen and Meckling,1976); • Transaction Cost Theory (Coase,1937; Williamson, 1981).
Typical dependent variables	Knowledge transfer, ISO success, project performance	Relationship quality	Efficiency, cost, and benefits of outsourcing.
Typical independent variables	Formal training, client embedment, project novelty, domain and cross-domain exchange.	Trust, dependence, social interaction, shared vision, and commitment.	Outsourcing decision and efficient contract.
Implications for the current study	Both clients and vendors contribute to outsourcing success via knowledge transfer and effective knowledge transfer is key for ISO success	<ul style="list-style-type: none"> • The quality of relationship is important in researching ISO deals. • Meeting the mutual interests of partners is necessary in order to ensure the success of ISO and knowledge transfer. 	It is essential to consider the cost of outsourcing success.
Sample Reference	<ul style="list-style-type: none"> • Aziati et al. (2013); • Williams (2011); • Lertpittayapoom et al. (2007). 	<ul style="list-style-type: none"> • Park and Lee (2014); • PEE et al. (2010); • Liao et. al. (2009). 	<ul style="list-style-type: none"> • Taylor (2007); • Subasingha et al. (2012).

Among the social theories, Social Exchange (SE) and Relational Exchange (RE) theories are used frequently in the literature to explore the relationship aspects of outsourcing (e.g., Qi and Chau, 2015; Swar et al., 2012). According to SE and RE theories, satisfaction and performance of inter-organizational exchange are considered important measures of ISO success (Qi and Chau, 2015; Zainuddin et al., 2012). In ISO research, client-vendor relationship satisfaction is widely employed as a measure of outsourcing success. Satisfaction with the outsourcing relationship refers to client and vendor’s satisfaction with their interactions and wanting to work together in future projects (Zainuddin et al., 2012). Many ISO studies have measured success from a relational satisfaction perspective (e.g., Park and Lee, 2014, Pee et al., 2010; Liao et al., 2009; Lee and Kim, 1999).

2.7.3. Knowledge and Learning Perspective

The role of knowledge in ISO is recognized in prior research. Thus, the knowledge and learning perspective of ISO stresses that effective management of knowledge and achievement of learning are central to ISO success (Teo and Bhattacharjee, 2014; Deng and Mao, 2012; Lertpittayapoom, 2007). To better understand and explain ISO success from the knowledge management point of view, ISO literature used different theories such as Resource-Based View (RBV), Knowledge-Based View (KBV) and Organizational Learning Theory (OLT).

Knowledge-Based View (KBV) considers knowledge as a key resource that can lead to a firm's improved performance (Grant, 1996; Davenport and Prusak, 1998). This theory views a firm's internally developed knowledge stock and the efficiency of such knowledge creation, transfer, and utilization can determine the success of the firm over its competitors (Kogut, 2000; Kogut & Zander, 1992).

According to KBV, through outsourcing relationships, outsourcing firms can get access to external knowledge resources that each firm lacks (Teo and Bhattacharjee, 2014; Su and Mao, 2013). Besides, outsourcing relationships create an opportunity for mutual learning by which partners can gain new knowledge and skill from each other (Connell and Voola, 2007; Nodari et al., 2013; Hamel, 1991). In sum, KBV and OL propose that outsourcing success needs to be measured from the benefits of knowledge (e.g., project management skills) and achievement of learning (Teo and Bhattacharjee, 2014; Lertpittayapoom, 2007).

2.8. Knowledge and Knowledge Management

In knowledge management literature, there exist different definitions of the concepts of knowledge and knowledge management. For the purposes of this study, it is good to cite the definitions that are in common use. Hence, Davenport and Prusak (1998, p. 3) defined knowledge as:

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information [...].

Knowledge is a valuable organizational asset from a strategic perspective (James, 2004) and a basis for sustaining a competitive advantage (Erden et al., 2008). Although the recognized benefits of knowledge, successful transfer and utilization of knowledge is a difficult task

(Easterby-Smith et al., 2008). Such difficulty is mainly due to the complex nature of knowledge and some knowledge is embedded in organizational routines and in source-receiver interactions and relationships (Hamid and Salim, 2010; Garud, 1997). Thus, the proper understanding of the concept knowledge is essential to address the problem under study (see Table 2.4 for a summary).

Table 2. 4 Summary of Knowledge-related Terms

Concept	Definition	Perspective	Dimension
Knowledge	<i>Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information [...] (Davenport and Prusak, 1998, p. 3).</i>	<ul style="list-style-type: none"> • a state of mind, • an object, • a process, • a condition of having access to information, • a capability, • a social practice, • a commodity, • (Schultze and Leidner, 2002; Alavi and Leidner, 2001). 	<ul style="list-style-type: none"> • Tacit • Explicit
Knowledge Management	<i>Is a deliberate, organized, and systematic process of creating, storing, transferring, applying, and updating of organizational knowledge for achieving superior organizational outcomes (Bernard and Tichkiewitch, 2008; Schultze and Leidner, 2002).</i>	-	-

On the other hand, knowledge management refers to is a deliberate, organized, and systematic process of creating, storing, transferring, applying, and updating organizational knowledge for achieving superior organizational outcomes (Bernard and Tichkiewitch, 2008; Schultze et al., 2002).

This next sections review the knowledge perspectives, knowledge dimensions, and knowledge management processes by focusing on knowledge transfer and utilization (Sub-section 2.8.1 to Sub-section 2.8.3).

2.8.1. Different Perspectives on Knowledge

There are different perspectives by which knowledge may is viewed and successfully managed (Schultze and Leidner, 2002; Alavi and Leidner, 2001): (1) a state of mind, (2) an object, (3) a

process, (4) a condition of having access to information, (5) a capability, (6) a social practice, and (7) a commodity.

The perspective on knowledge as a state of mind describes knowledge as the 'state or fact of knowing and understanding' (Alavi and Leidner, 2001). This perspective stresses that only individuals can know and convert knowing into action and thinks that the knowledge of individuals can be applied for organizational needs by enabling individuals to expand their personal knowledge. The second perspective viewed knowledge as "an object that can exist outside an individual, that can be stored and manipulated in the absence of a human knower, and that can be transferred to others (humans or machines)" (Schultze and Leidner, 2002, p. 221). This view assumes that knowledge can be codified, detached from the minds of individuals, stored (e.g., in computerized systems and manuals), and shared from one entity to another without any problem (Joshi et al., 2007).

According to the object view of knowledge, the "*specific characteristics of the sender, receiver, or the knowledge itself play no role in the transfer or sharing*" (Joshi et al., 2007, p. 323). However, this view is criticized for ignoring the context within which the transfer occurred and considering the knowledge user as a passive actor while the knowledge transfer took place (Parent et al., 2007). In the third alternative view, knowledge is seen as "a process of simultaneously knowing and acting" (Alavi and Leidner, 2001, p. 110). Within this perspective, knowledge is viewed as "context-bound" and its transfer is considered as complex due to factors such as the need for shared understanding, cooperation, negotiation, and social interactions between actors (Hamid and Salim, 2010; Joshi et al., 2007).

Alternatively, knowledge can be viewed as a 'condition of access to information' (Alavi and Leidner, 2001). According to this view, organizational knowledge needs to be organized in a way that facilitating access to and retrieval of content. While this view seems like an extension of knowledge as an object view, it places a special emphasis on the accessibility of the knowledge objects (Alavi and Leidner, 2001). The capability perspective viewed knowledge as a potential for specific action (Parent et al., 2007). The authors further argued that knowledge-related capability of a social system (e.g., organization) is central for succeeding in knowledge creation, transfer, and utilization.

On the other hand, the perspective on knowledge as a social practice considered knowledge embedded in a community and is context dependent rather than belongs just to individuals (Brown and Duguid, 2001). The perspective on knowledge as a commodity perspective defines knowledge as "something that poses as a neutral object or resource" (Schultze and Leidner, 2002, p. 227). However, this view of knowledge is criticized as knowledge is not a neutral object rather it can be carefully crafted fitting with specific market or organizational contexts (Schultze and Leidner, 2002, p. 227). In sum, the different perspectives on knowledge lead to the different perceptions of knowledge and suggest the primary focus areas of knowledge management initiatives in effectively managing knowledge. This study is based on knowledge as an object and a capability perspectives.

2.8.2. Knowledge Dimensions

Due to the multidimensionality of knowledge, various taxonomies of knowledge have been provided in literature. However, the most commonly used are the explicit/tacit and individual/collective dichotomies (Nidhra et al., 2013). Explicit knowledge can be codified and transferred in formal, systematic language (Nonaka & Takeuchi, 1995), for example, written manuals, procedures, or templates. Explicit knowledge is free of context (Chen, 2010). In contrast, tacit knowledge is "rooted in actions, experience, and involvement in specific context" (Alavi and Leidner, 2001, p. 113). This dimension of knowledge is difficult to formalize codify, and transfer to others (Khamseh and Jolly, 2008; Chen, 2010). Unlike individual knowledge that is created by individuals and held in their minds, collective knowledge is generated by the collective actions of a group (De Long & Fahey, 2000; Nonaka, 1994). Taking tacit-explicit and individual-collective knowledge dimensions, Lam (2000) proposed four categories of knowledge. These include:

- a) Embrained knowledge (Individual–Explicit)- this knowledge is individual, explicit type of knowledge focusing of the understanding and theoretical reasoning of the universal principles that govern nature;
- b) Embodied knowledge (Individual– Tacit)- it is individual, tacit type of knowledge which is gained from practical experience and its relevance is revealed while tackling the problem at hand;

- c) Encoded knowledge (Collective–Explicit)- it is collective, explicit type of knowledge that has been codified and existed in written rules and procedures;
- d) Embedded knowledge (Collective–Tacit) - this category of knowledge is “*the collective form of tacit knowledge that resides in organizational routines and shared norms*” (Lam, 2000, p. 493).

A well-known attempt to provide taxonomies of knowledge in the context of knowledge management systems is that of Alavi and Leidner (2001). These includes tacit, cognitive tacit, technical tacit, explicit, individual, social, declarative, procedural, causal, conditional, relational, and pragmatic. While the conditional, relational, and pragmatic categories describe certain aspects of knowledge items, they are not generally recognized as basic dimensions of knowledge (Ein-Dor,2011). Based on knowledge categories made by Alavi and Leidner (2001), Ein-Dor (2011) categorized knowledge as tacit/explicit, individual/social, declarative/procedural, and task/context. In addition, Heisig (2009) identified 28 knowledge dichotomies. The main ones include: implicit/tacit/explicit, individual/organizational, internal/external, used/unused, undocumented/documented, structured/unstructured, relevant/irrelevant, and objective/subjective knowledge. Other simple yet comprehensive taxonomies include ‘know-what/know-why/know-how/know-who’ (Lundvall, 1996).

In sum, the traditional tacit and explicit categories are also opposite poles of a single dimension of knowledge (Ein-Dor, 2011). This implies that a given knowledge item may have two components: tacit and explicit. Ein-Dor suggests that when characterizing any given knowledge object, it has to be in line with these two extremes. Besides, knowledge taxonomies are very generic and they have limitations to provide a comprehensive specification of a knowledge item in a specific knowledge context (Ein-Dor, 2011; Holsapple and Joshi, 2011). Therefore, relying on the traditional tacit/explicit knowledge categories is necessary but it is not sufficient to pre-establish the knowledge resources required in outsourced ISD projects (Santhanam et al., 2007). Thus, the identification of the specific knowledge items in such type of knowledge work is crucial to the successful management of knowledge (Holsapple and Joshi, 2011).

Although different types of knowledge might be available to participants of an inter-organizational relationship, knowledge-related practices of the participants (such as knowledge

transfer, creation, and utilization) have an impact on the effective management of the knowledge. The next section reviews knowledge management processes that are related to this study context.

2.8.3. Knowledge Transfer and Utilization

As summarized in Table 2.4, the knowledge management processes include knowledge creation, storage, transfer, utilization, and renewal. As this study focused on transfer and utilization processes, this section reports the reviews of literature related to these two processes at length.

Knowledge transfer within or outside of an organization is very important. Without knowledge transfer, organizations would have to discover and create the required knowledge whenever they encountered a problem or lacked an operating skill. Literature shows that organizational knowledge and innovative capabilities can be improved by leveraging the knowledge and skills of others through the means of knowledge transfer both within and across organizational boundaries (Esterby-Smith et al., 2008). Effective knowledge transfer is very critical in a highly competitive and uncertain environment (Pérez-Nordtvedt et al., 2008). When knowledge is effectively transferred and utilized it leads to organizational value (Liyanage et al., 2009).

Literature has provided various definitions of knowledge transfer (e.g., Szulanski, 1996; Argote and Ingram, 2000; Darr and Kurtzberg 2000; Kumar and Ganesh, 2009). In general, there is a lack of a common definition of knowledge transfer and the different definitions provided by researchers have three key limitations. First, most definitions are based on the notion of one-dimensional transfer of knowledge, from the source to the recipient. However, knowledge transfer is a two-way process (Liyanage et al., 2009; Subasingha et al., 2012) and its definition need to show this aspect, Section 2.9.1 offers further discussion.

Second, the concepts of knowledge transfer and knowledge utilization are combined. For instance, combining the concepts of knowledge movement and application of knowledge, Ko et al. (2005, P. 62) defined knowledge transfer as "the communication of knowledge from a source so that it is learned and applied by a recipient". However, combining the concepts of knowledge movement and knowledge application and attempting to measure them combined has a methodological limitation that makes researchers unable to come up with possible alternative explanations for their significant findings (Wang and Noe, 2010). In the works of Khamseh et al.

(2017) and Teo & Bhattacharjee (2014), knowledge transfer and knowledge utilization are taken as distinct concepts. Accordingly, they defined knowledge transfer as the degree to which knowledge flows from the source to the recipient and knowledge utilization as the degree to which such transferred knowledge is used by the recipient.

Third, the terms Knowledge Sharing (KS) and Knowledge Transfer (KT) are used interchangeably in the different works of researchers (e.g., Zimmermann and Ravishankar, 2014; Susanty et al., 2012). However, scholars made a clear distinction line between these two confusing terms. According to Hamid and Salim, (2011), KS and KT differ in their focus areas, individuals and organizations, respectively. In clear expression, "people share knowledge whereas organizations transfer knowledge" (Hamid and Salim, 2011, P. 52). King and He (2011) argue that KT is focused, objective-oriented, and has a clearly-defined source and recipient; however, KS has no clearly defined objective, which is an informal and less focused exchange of knowledge among individuals or groups. In addition, Yang and Kim (2007) opined that we would rather use the term KT instead of KS when there is an active dedicated channel for knowledge to be exchanged between two parties such as a face-to-face meeting, or an e-mail exchange. Based on such distinctions, KT seems to be more relevant to use in inter-organizational knowledge exchanges having clearly defined purposes and exchanging partners are engaged in direct interactions and devised active transfer mechanisms to exchange their knowledge with each other, while KS can be used for knowledge exchanges at individuals' level. The next sections discuss knowledge and knowledge management in the ISO context.

2.9. Knowledge Management in ISO Context

ISDO is a complex and knowledge-intensive activity that involves effective utilization of specialized knowledge in guiding designs and developing the system (Li et al., 2014; Deng and Mao, 2012). On the other hand, ISO failure reports are reported (Wang et al., 2018; Nuwangi and Sedera, 2018). Therefore, the ISD process and outcomes need to be examined from knowledge management perspective to improve ISDO success (Teo and Bhattacharjee, 2014; Lertpittayapoom, 2007).

There is growing evidence that shows the importance of knowledge in ISDO (Lacity et al., 2017; Zimmermann and Ravishankar, 2014; Teo and Bhattacharjee, 2014). In the ISO context, business

knowledge and technical knowledge are the main types of knowledge (Hamid and Salim, 2011; Gopal and Gosain, 2010). Business knowledge is defined by Chang and Parikh (2006, p. 3258) as “knowledge about the intended user’s business processes, business rules, and requirement for the new system”. This knowledge is mainly owned by the client and the vendor acquires through the requirements elicitation process that converts it to functional specifications. On the other hand, technical knowledge refers to the knowledge that converts a client's business needs and requirements into a software-based solution (Tiwana et al., 2003). It includes knowledge about ISD procedure (e.g., systems analysis, detailed design, and configuring, testing and debugging) and programming (e.g., programming languages and tools), operating, and testing (Xu and Ma, 2008; Pee et al., 2007). The technical knowledge also includes the knowledge about the client's existing systems (e.g., programming languages, operating systems, databases, design tools) and IT infrastructure and client-specific applications of these technologies (Chua & Pan, 2008). Vendor organizations have rich technical knowledge but they typically lack business domain knowledge (Willcocks et al., 2004). Table 2.5 summarizes the different types of knowledge in the ISO context as identified by prior research

In the work of Al-Azad and Ahn (2014), advanced IT knowledge, domain knowledge, and cross-cultural knowledge, IT outsourcing project management knowledge are distinguished as vendors' body of knowledge. Gregory et al. (2009) identified three categories of knowledge: business application domain knowledge (e.g., client’s business domain, business processes, business goals and objectives), process knowledge (e.g., client-specific working procedures and standard software development methodologies), and client-specific functional knowledge (e.g., client’s systems, IT infrastructure, and the functional requirements). Besides, Chu and Pan (2008) described technological knowledge, application domain knowledge, information systems application, organizational, and ISD process knowledge as the key knowledge areas in ISO engagements.

Generally, the identified knowledge areas are complementary but not completely independent. In outsourced ISD projects contexts, both knowledge types are important and needed to be utilized in the development process to ensure effective and efficient information system product (Tiwana, 2009; Iivari et al., 2004). Moreover, the full range of complementary knowledge required to develop the outsourced ISD project is possessed by the client or the vendor (Tiwana, 2009).

Practically, the client has rich business domain knowledge but lacks technical knowledge. Similarly, the vendor has higher technical knowledge than the knowledge of the business domain for which the information system is developed.

Table 2. 5 Summary of Knowledge Types in ISO

Typical work	Types of knowledge	Perspective	Limitation
Al Azad and Ahn(2014)	<ul style="list-style-type: none"> Advanced IT Knowledge Domain Knowledge Cross-cultural Knowledge ITO project Management Knowledge 	Vendor	Identifies only vendor's body of knowledge and its transfer to clients may not lead to successful ITO.
Hamid and Salim(2011)	<ul style="list-style-type: none"> IT special knowledge business knowledge 	Client-vendor	General- details of the two knowledge dimensions are not provided.
Gopal and Gosain(2010)	<ul style="list-style-type: none"> business domain knowledge Technical Knowledge 	vendor	General- each knowledge type is not explicitly stated.
Blumenberg et al. (2009)	<ul style="list-style-type: none"> business-specific knowledge technology-specific knowledge 	Client-vendor	General- lack details about each type of knowledge.
Gregory et al. (2009)	<ul style="list-style-type: none"> business application domain knowledge process knowledge client-specific functional knowledge 	Client	No clear indication of the different classes of knowledge to be transferred to clients from vendors.
Yun (2009)	<ul style="list-style-type: none"> Domain Knowledge technical Knowledge Process Knowledge Cultural Knowledge 	Vendor	General- lack details about each type of knowledge.
Chua and Pan (2008)	<ul style="list-style-type: none"> Technological Knowledge Application Domain Knowledge IS Application Organizational IS Development Process Knowledge 	Client	Focuses only on how easy are the identified knowledge to learn and the learning process involved.
Chang and Parikh (2006)	<ul style="list-style-type: none"> Tacit Business knowledge Explicit Business Knowledge Tacit Technical Knowledge Explicit Technical Knowledge 	Client-vendor	Specific details regarding the tacit and explicit aspect each business and technical knowledge are not provided.

In addition, each identified knowledge type has tacit and explicit knowledge components (Chang and Parikh, 2006). For instance, a client's business knowledge has tacit and explicit dimensions. Explicit business knowledge includes documented routine work processes, standard rules of operating procedures, requirements documents, well-defined product specifications, organization structure diagrams, etc. On the other hand, know-how regarding business processing is a tacit

type of business knowledge. Similarly, the technical knowledge of the vendor can be tacit technical knowledge and explicit technical knowledge. Tacit technical knowledge can be the know-how to normalize a database or how to design an IS, the new system's mental schemas, and know-how of the technologies used. Explicit technical knowledge comprises of written system specifications, systems design, test cases, data models, data flow diagrams, software codes and documentation, and manuals. While prior studies attempted to identify the different kinds of knowledge in the ISO context, they are in a fragmented way. As a result, investigations of the specific knowledge items required in the ISO context from a dyadic perspective are necessary to identify and enhance the understanding of these knowledge items in the IS outsourcing relationship.

The following sub-sections review the literature on knowledge management in ISO context including knowledge transfer and utilization, the key theories of knowledge, and the knowledge factors impacting successful transfer and utilization of knowledge in ISO arrangement.

2.9.1. Knowledge Transfer and Utilization in ISO

A successful development of an outsourced ISD project demands knowledge transfer between the outsourcing partners, proper integration of the knowledge received from different sources, and utilization of the knowledge to solve the client's business problem. As ISO is viewed as a boundary-crossing mechanism (Gottschalk, 2006), outsourcing partners can use it for creating shared understanding, which is pivotal for knowledge transfer to take place (Rai and Tang, 2010). In other words, such relationships can create a conducive environment for knowledge transfer between the parties involved in the outsourcing engagements (Hamid and Salim, 2011).

In this paper, knowledge transfer and knowledge utilization are considered as two distinct concepts. Therefore, knowledge transfer is defined as a bi-directional flow of knowledge between the vendor the client where the outsourcing partners are playing different roles (as a knowledge source and a knowledge receiver) during the development of an outsourced IS project, see Figure 2.1. On the other hand, knowledge utilization refers to the extent to which the knowledge transferred between the parties is used in outsourced information systems development tasks and in partners' internal business activities.

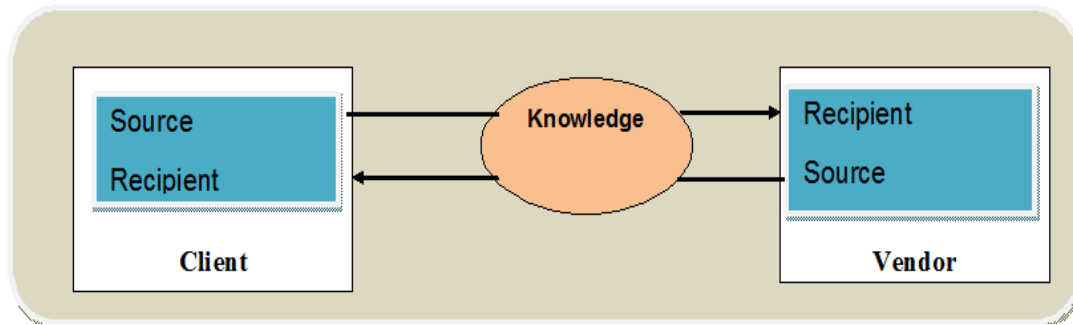


Figure 2. 1 Graphic representation of knowledge transfer

As discussed in Section 2.9, two main types of knowledge are essential in ISDO context. Therefore, the proper transfer of application domain knowledge, as well as knowledge regarding the client’s current and potential needs is highly essential to information system product specifications, to propose innovative ideas for the product, and to figure out product’s performance requirements. According to Ahuja et al. (2011), effective transfer of knowledge from the client to the vendor will create shared understanding between the outsourcing partners about how the proposed software system’s functionality and design can support the project’s objectives and satisfy users needs and requirements, thus leading to higher project outcomes. On the other hand, the transfer of technology specific knowledge from the vendor helps the client to renew its technical knowledge (critical IT skills) and business knowledge base (Cha et al., 2008; Rottman, 2008). Moreover, the provision of both documented knowledge and other tacit knowledge to the client will give powerful support and insurance to the successful application of software products (Wang and Gan, 2010). Therefore, the success of outsourced ISD project can be achieved through effective transfer, integration of client’s business knowledge and vendor’s technical knowledge during the development process, and utilization of knowledge (Deng and Mao, 2012; Hamid and Salim, 2011).

Beyond getting the system developed, a successfully built outsourcing relationship can provide an excellent opportunity to outsourcing parties to increase each other's collective knowledge (Aydin & Bakker, 2008; Blumenberg, et al., 2009). Clients can get the opportunity to acquire technology specific knowledge from the vendors that helps them to solve challenging technical problems, handle complex projects, and promote new ways of doing things (Yakhlef, 2009; Oshri et al., 2008). Furthermore, Ko et al. (2005) argue that client can use the outsourcing relationships for acquiring new implementation, operational, maintenance and training

knowledge. Similarly, vendors can use the outsourcing relationships for the development of client-specific operational and process capabilities which is highly essential in today's highly competitive environment (Su and Mao, 2013). Wang and Gan (2010) further argued that properly transferred knowledge from clients allows vendors to improve their capability of rapid response to market. In case of a mature client, the vendor can also be benefited more in developing its operational capabilities as the client possesses its own development theories, methodology, and rich know-how, it can provide more guidance and support in information systems development processes and shares other important knowledge to its vendor (Su and Mao, 2013).

In spite of knowledge transfer benefits, achieving successful transfer of inter-organizational knowledge can be problematic. This is due to the contextualized nature of knowledge (Hamid and Salim, 2010) and some knowledge resides in organizational members, tools and tasks (Karhu et al., 2007). Furthermore, transferring of knowledge is not merely an act, rather it is a process between the source and recipient, and the transfer process is affected by various factors (Kwan et al., 2006; Szulanski, 2000). As a result, various theoretical lenses are used in ISO literature to study knowledge transfer and utilization phenomena.

2.9.2. Key Theories of Knowledge

As discussed in Section 2.7, different theories are used in literature to explain the ISO success phenomenon. Similarly, prior studies adopted various theories to examine and understand knowledge-related factors impacting successful transfer and utilization of knowledge in ISO relationships. Some of the main theories include social capital (Nahapiet and Goshal, 1998), resource-based view (Barney, 1991), knowledge-based view (Grant, 1996; Spender, 1996; Kogut and Zandar, 1992), organizational learning theory (Hubber, 1991), social exchange theory (Blau, 1964; Cook, 1977; Emerson, 1962), and relationship maintenance theory (Hewett and Bearden, 2001). The summary of these theories is given in Table 2.6.

The social capital theory argues that social capital facilitates knowledge creation, transfer, and use through its three dimensions: structural, relational, and cognitive (Nahapiet and Goshal, 1998). According to the authors, the structural dimension focuses on creating social ties or networks within and with external organizations to access, process, and transfer knowledge. The relational dimension, on the other hand, stresses building trustful personal relationships as it is

vital for knowledge transfer to succeed, which in turn will lead to mutual benefits. Lastly, the cognitive dimension indicates that the resources within relationships provide shared vision, representations, interpretations, systems of meanings, and contextual understanding among interacting parties, which in turn facilitates knowledge transfer among the partners. Typical examples of ISO studies that used social capital theory are Zimmermann and Ravishankar (2014) and Liao et al. (2009).

The resource-based view (RBV) argues that organizational resources and capabilities are the key factors that lead to gaining sustained competitive advantage (Barney, 1991). RBV characterizes these resources as rare, inimitable, valuable, non-substitutable, and inimitable. While valuable resources are important, a firm's competitive advantage depends on its capability to acquire, develop, combine, and deploy the existing resources (Grant, 1991; Barney, 1991). The work of Lee (2001) depicted the applicability of RBV within the context of ISO.

On the other hand, the knowledge-based view of a firm (KBV) views a firm as a knowledge system where knowledge-related activities such as creation, exchange, and application are taking place (Kogut and Zander, 1996). This view gives special emphasis to knowledge and it assumes that knowledge is a key resource. In short, KBV argues that a firm's knowledge bases and its ability to accomplish those knowledge-related activities are central for sustaining competitive advantage (Grant, 1996; Spender, 1996). As a theoretical lens, KBV is used by researchers while investigating knowledge transfer in ISO relationships (e.g., Williams, 2011; Lee, 2001).

The other theory used in ISO literature is Organizational Learning Theory (OLT). OLT considers organizations as cognitive entities capable of observing, experimenting, and adapting their actions to cope with the fast-changing environment (Fiol and Lyles 1985; Robey et al. 2000). An organization can only do so through learning, which is a means of gaining useful knowledge (Hamel, 1991). For instance, Lertpittayapoom et al. (2007) and Deng and Mao (2012) studied knowledge transfer in ISO through the lens of organizational learning theory.

Social Exchange Theory (SET) mainly explains the behavioral or social side of dyadic inter-organizational exchange relations. According to SET, a dyadic exchange relation is characterized by voluntary transactions where valuable resources (such as knowledge) are exchanged between exchanging parties (Blau, 1964). Thus, this theory was used by previous ISO studies to

understand knowledge transfer behaviors of partners engaged in ISO deals (e.g., Lee, 2001; Qi and Chau, 2015).

Table 2. 6 Summary of Key KT Theories in ISDO Research

Theory	Key Proposition	Typical Dependent Variable(s)	Typical Independent Variable(s)	Sample References
Social Capital	Social capital facilitates knowledge creation, transfer, and use through its three dimensions: structural, relational, and cognitive (Nahapiet and Ghoshal, 1998).	Knowledge Transfer, ISO Success	Social interaction, shared vision, and trust	Zimmermann and Ravishankar (2014); Liao et al. (2009)
Resource-Based View	Organizational resources and capabilities are the key factors that lead to gaining sustained competitive advantage (Barney, 1991).	ISO Success	Knowledge Sharing	Lee (2001)
Knowledge-Based View	A firm as a knowledge system where knowledge-related activities such as creation, exchange, and application are taking place (Kogut and Zander, 1996).	Knowledge utilization	Inappropriate reliance on informal discussions, Client embedment	Williams (2011); Lee (2001)
Organizational Learning Theory	Organizations are cognitive entities capable of observing, experimenting, and adapting their actions to cope with the fast-changing environment (Fiol and Lyles 1985; Robey et al. 2000).	Project Performance	Learning about client, learning from client	Deng and Mao (2012); Lertpittayapoom et al. (2007)
Social Exchange Theory	A dyadic exchange relation is characterized by voluntary transactions where valuable resources (such as knowledge) are exchanged between exchanging parties (Blau, 1964)	ISO success, Knowledge Transfer	Trust, knowledge and commitment	Lee (2001); Qi and Chau (2015)
Relationship Maintenance Theory	Trust and dependence between partners as the key determinants of successful exchange relationships (Hewett and Bearden, 2001).	Knowledge sharing, project performance	Trust and dependence	Park and Lee (2014)

Lastly, Relationship Maintenance Theory (RMT) views trust and dependence between partners as the key determinants of successful exchange relationships (Hewett and Bearden, 2001). According to this theory, these two factors play active roles in fostering collaboration between the parties and promoting knowledge transfer activities. In the ISO setting, RMT was used by Park and Lee (2014).

Finally, since the study's objective is to enhance ISDO success from Knowledge and Knowledge related capabilities, knowledge-based and social exchange theories were chosen to understand and investigate the phenomena under study. In the first place, the knowledge-based view of the firm provides better explanations about knowledge and knowledge-related capabilities of the firm to create, transfer, and utilize knowledge for enhancing ISO performance (Williams, 2011; Lee, 2001). In addition to the knowledge-based view, social exchange theory is preferable while studying the dyadic knowledge exchange behaviors of partners engaged in an outsourcing relationship as it covers a wide range of issues such as social, economic, and psychological (Qi and Chau, 2015; Juntiwasarakij and Trauth, 2009). Section 3.4 provides additional discussion.

2.9.3. Factors Impacting Knowledge Transfer and Utilization in ISDO

The issue of knowledge related factors particularly in the context of IS outsourcing draws the attention of IS researchers, see Table 2.7 for a summary. For a start, Teo and Bhattacharjee (2014) examined the influencing factors and effects of knowledge transfer and utilization on ISO performance of client organizations. Their research model was empirically tested using the data obtained through a survey of 146 IT outsourcing partnerships in Singapore. The results show that the characteristics of outsourcing clients, vendors, and knowledge codifiability facilitate knowledge transfer to clients. Moreover, their study shows that knowledge transfer has a significance positive effect on knowledge utilization, and greater knowledge utilization improves client-firms' operational and strategic gains in IT operations of client-firms. However, the work of Teo and Bhattacharjee (2014) focuses on knowledge transfer from IT outsourcing vendor to client.

The study conducted by Park and Lee (2014) was aimed at understanding the behavioral mechanism that encourages project partners to share knowledge in IS implementation projects. Their study used a cross-sectional survey as a research method and project team level as a unit of analysis. The data were collected in Korea from 139 large and complex systems implementation projects, such as Enterprise Resource Planning (ERP). The results indicate that dependence and trust have strong effects on knowledge sharing, leading to good team project performance. Zainuddin et al. (2012) examined the links between competencies (of client and vendor project managers) and information system outsourcing project outcomes using a social exchange theory lens. The authors conducted a multiple case study of two IS outsourcing projects. The results of

their study show that domain and cross-domain knowledge exchanges lead to success of an outsourced project.

Liao et al. (2009) studied knowledge sharing between outsourcing service providers and receivers and its impact on IS outsourcing success. The study used survey research method and 179 responses from were obtained the largest 1000 client firms in Taiwan. The findings of their study indicated that trust and shared vision are the key determinants of knowledge sharing, which in turn results in IS outsourcing success. Although Liao et al. (2009) studied the antecedents of knowledge sharing and its effect on IS outsourcing success, the study was based on the client's view while examining knowledge transfer from vendors to clients. Using a case study approach, Lertpittayapoom et al. (2007) examined knowledge transfer in a software development/implementation project that involves collaboration between a client and a vendor. The findings of their study indicated that knowledge transfer is effective when a collective learning is achieved by each party engaged in the transfer process. In other words, knowledge transfer to be successful for each partner, learning should occur at each level, starting from the individual, to group, to organizational levels.

The empirical study of Ko et al. (2005) indicated that three set of factors namely communication-related (communication decoding competence, communication encoding competence, source credibility), knowledge related (absorptive capacity, shared understanding, and arduous relationship) and motivational-related (recipient intrinsic motivation, source intrinsic motivation) factors facilitate knowledge transfer from consultants to clients.

Through analyses of IS, knowledge management and strategic management literature, Al-Salti et al. (2010) identified four sets of factors affecting effective knowledge transfer from vendors to clients in ISO. These are knowledge-related (i.e., tacitness, and complexity, causal ambiguity), source-related (i.e., capability and credibility), recipient-related (i.e., learning intent, absorptive capacity and motivation), and relationship-related (i.e., organizational distance and social ties) factors.

Table 2. 7 Key studies on Knowledge Transfer and utilization in ISO

Author	Context and Research Method	Typical Independent Variables	Typical dependent Variable/s	Perspective
Teo and Bhattacharjee (2014)	<ul style="list-style-type: none"> • KT from vendor to client in 146 ITO partnerships in Singapore. • Survey research 	<ul style="list-style-type: none"> • Client motivation • Vendor willingness • knowledge Codifiability 	KT	Client
		<ul style="list-style-type: none"> • Knowledge Transfer (KT) 	KU	
		<ul style="list-style-type: none"> • Knowledge Utilization (KU) 	IT Performance	
Park and Lee (2014)	<ul style="list-style-type: none"> • 139 large and complex projects such as ERP in Korea. • Survey research 	<ul style="list-style-type: none"> • Knowledge Sharing (KS) 	Project team Performance	Project team
		<ul style="list-style-type: none"> • Dependence • Trust 	KS	
Liao et. al. (2009)	<ul style="list-style-type: none"> • Based on largest 179 client firms in Taiwan. • Survey research 	<ul style="list-style-type: none"> • Shared vision • Trust 	ISO Success	Client
Ko et al. (2005)	<ul style="list-style-type: none"> • ERP • Survey research 	<ul style="list-style-type: none"> • Communication-related (<i>Communication decoding competence, communication encoding competence, source credibility</i>) 	KT	Client
		<ul style="list-style-type: none"> • Knowledge related (<i>absorptive capacity, shared understanding, and arduous relationship</i>) • Motivational-related (<i>recipient intrinsic motivation, source intrinsic motivation</i>) 		
Al-Salti et al. (2010)	Review of IS and KM literature published from the years 2000-2009.	<ul style="list-style-type: none"> • Knowledge-related (<i>tacitness, complexity, causal ambiguity</i>) • Source-related (<i>capability and credibility</i>) • Recipient-related (<i>learning intent, absorptive capacity and motivation</i>) • Relationship-related (<i>organizational distance and social ties</i>) 	KT	Client

2.9.4. Factors Impacting Knowledge Transfer and Utilization in ISDO Context of Developing Economies

Some studies have been conducted within the context of developing economies, see Table 2. 8 for a summary. Aziati et al. (2013) study knowledge transfer in ISO deals particularly in the Malaysia public sector organizations. According to the authors, knowledge replication & adaptation routines, and the changes in knowledge or skill based among project team members are determinants of effective knowledge transfer. However, the work of Aziati et al. (2013) considers only the client organizations and the effect of knowledge transfer is seen at the team level. The study of Al-Salti (2011) study focused on knowledge transfer in three public sector organizations in Oman. The findings of the study indicated the different antecedent factors of knowledge transfer success in ISO. These include knowledge tacitness, knowledge complexity, client's learning intent, client's absorptive capacity, client's motivation, vendor capability, vendor credibility and vendor openness, relationship quality, relationship duration, relationship governance, organizational distance, and formal and informal and knowledge transfer mechanisms.

Deng and Mao (2012), on the other hand, explore knowledge transfer to vendors from their clients in offshore ISO. Their study's findings show that vendors can achieve improved project performance through learning about the client and learning from the client. In Indian software development outsourcing setting, Gopal and Gosain (2010) study the effect of boundary-spanning activities between the vendor and the client and the effect it has on knowledge sharing. The data were collected using survey method from a sample of 96 projects and tested empirically. The findings showed that boundary-spanning activities between the vendor and the client facilitate knowledge sharing across organizational and knowledge domain boundaries. Nevertheless, the findings of Gopal and Gosain (2010) are from the perspective of the vendor.

From the Chinese vendor's perspective, the use of software development methodology and vendors' relationships with clients were found as important facilitators of knowledge sharing with the vendor by Xu and Yao (2013). Moreover, their result shows that knowledge sharing has more impact on process efficiency than on product quality. In the context of India, the findings of Williams (2011) indicated that formal training and client embedment impacted knowledge transfer from onshore clients to offshore vendor positively.

Table 2. 8 Key Studies on KT and Utilization in ISO within Developing Economies

Author	Context and Research Method	Typical Independent Variables	Typical Dependent Variables	Perspective
Alsalti (2011)	<ul style="list-style-type: none"> • Oman • Qualitative, multiple case study 	<ul style="list-style-type: none"> • Knowledge factors (<i>knowledge tacitness, knowledge complexity</i>) • Client factors (<i>client's learning intent, client's absorptive capacity, client's motivation</i>) • Vendor factors (<i>vendor capability, vendor credibility and vendor openness</i>) • Relationship factors (<i>relationship quality, relationship duration, relationship governance, organizational distance</i>) • Knowledge transfer mechanisms (<i>formal and informal mechanisms</i>) 	KT	Client
Deng and Mao (2012)	<ul style="list-style-type: none"> • China, Survey Method 	Knowledge Transfer (<i>learning about the client and learning from the client</i>)	Project Performance (<i>project quality and cost control</i>)	Vendor
		<ul style="list-style-type: none"> • Client support • knowledge articulation 	KT	
Xu and Yao (2013)	<ul style="list-style-type: none"> • Software companies in China engaged on Offshore outsourcing • Survey Method 	Knowledge sharing	Offshoring Project Success	Vendor
		<ul style="list-style-type: none"> • Use of Software Development Methodology • Relationship with client 	KS	
Williams (2011)	<ul style="list-style-type: none"> • Survey of 140 vendor software engineers located in India. 	<ul style="list-style-type: none"> • Formal Training • Client Embedment 	KT	Vendor

As shown in Table 2.8, some offshore ISO studies were conducted in Asian countries from the developing economies perspective. However, little research is done in the context of African countries in general and Ethiopia in particular by linking knowledge-related factors and ISDO success.

2.10. Chapter Summary

Due to the continued ISO failure reports, researchers investigated ISO success from relational, transactional, and knowledge and learning perspectives. Although these studies are attempting to understand the construct ISO success and explain its indicators, most studies were either from the client or the vendor point of view, but not both. By considering the importance of mutual benefits in a dyadic relationship, ISO success indicators need to be understood and analyzed from both the client and the vendor perspectives.

Addressing ISO failures from a knowledge management perspective has gained the focus of IS researchers. Despite the benefits of knowledge in ISO, successful transfer, integration, and utilization of knowledge at inter-organizational level is challenging for reasons like the contextualized nature of knowledge (Hamid and Salim, 2010), some knowledge resides in organizational members, tools and tasks (Karhu et al., 2007), and the transfer process between the source and recipient is affected by various factors (Kwan et al., 2006; Szulanski, 2000).

Various theories were used to understand and explain knowledge-related factors in ISO setting. However, the existing theories lack to provide better explanation and comprehensive understandings of dyadic level knowledge-related factors and mutual onshore ISDO success phenomenon. Moreover, prior studies took either the client or the vendor perspective to examine the impact of knowledge-related factors on ISDO success. As knowledge flows from the client to the vendor and vice versa, a comprehensive understanding of the key influencing knowledge factors from both client and vendor perspectives is essential. This study is based on knowledge-based view and social exchange theory lenses (see Section 3.4 for details).

As briefed in the first chapter, the information systems development project is a complex and knowledge-intensive work (Park et al., 2012; Tiwana and McLean, 2005). As a result, it is essential to investigate its development process and outcomes from the knowledge management perspective (Teo and Bhattacharjee, 2014; Subasingha et al., 2012; Gopal and Gosain, 2010). Thus, while developing the initial conceptual framework, onshore ISDO success was chosen as the dependent variable for this research following the comprehensive reviews of literature. Besides, in such knowledge-intensive work, the success of outsourced information systems projects is dependent on the transfer of the requisite knowledge between the client and the vendor organizations (Teo and Bhattacharjee, 2014; Subasingha et al., 2012), as well as the

utilization of the different types of knowledge transferred between the outsourcing partners (Li et al., 2014; Deng and Mao, 2012). Therefore, knowledge transfer and knowledge utilization) were chosen as influencing factors of onshore ISDO success.

In sum, the initial conceptual framework was developed based on the insights gained from knowledge management and ISO literature that focused on either the client or the vendor perspective (see Figure 2.2). This preliminary framework was used for guiding the study and analyzing the effect of knowledge-related factors on onshore ISDO success from the client-vendor perspective.

As shown in Figure 2.2, factors that affect knowledge transfer and utilization based on the client's view are identified from literature. Similarly, influencing factors were identified from the vendor's perspective. Then, the key common factors that influence both clients and vendors in their ISDO relationships are taken. In short, four categories of knowledge-related factors were used to frame the initial conceptual framework. These include knowledge-related (knowledge tacitness and knowledge complexity), relationships-related (trust), source-related (perceived value of knowledge), and recipient-related (learning intent and absorptive capacity). Three main points were considered while selecting the four sets of influencing factors from Table 2.7 and Table 2.8. These include:

- 1) each outsourcing partner acts as a knowledge source (i.e., client and vendor) and a knowledge recipient (i.e., client and vendor) during the development of an outsourced ISD project. Therefore, the factor that commonly affects the knowledge source to transfer knowledge to the recipient was selected. Similarly, the common factors that affect the knowledge recipient to receive the knowledge from the knowledge source were selected;
- 2) the nature and the characteristics of the knowledge to be transferred (i.e., knowledge tacitness and knowledge complexity) affect the absorptive capacity of the knowledge recipient, which, in turn, affect the successful transfer of knowledge (Alsalti 2010; Blumenberg et al., 2009);
- 3) the insufficiency of contractual obligations for effective knowledge transfer to occur in ISO deals (Lee et a., 2008). As a result, trust is the main relational factor chosen as the facilitator of successful knowledge transfer in an outsourcing relationship.

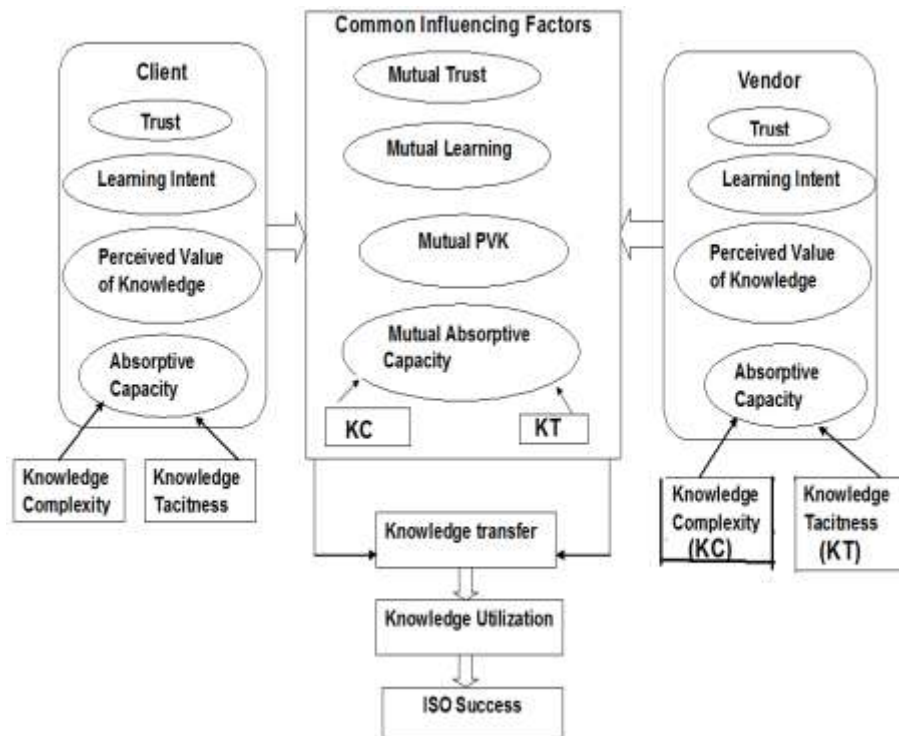


Figure 2. 2 Initial Conceptual Framework

Then, the initial conceptual framework is developed having nine theoretical constructs. Three of the nine constructs are newly constructed: mutual perceived value of knowledge, mutual absorptive capacity, and mutual learning intent. Thus, an exploratory study was done to (1) to understand the ISO and knowledge management context in Ethiopia; (2) verify the insights obtained from the literature that make up the conceptual framework; (3) identify additional insights from the collected data from the current knowledge-related practices of Ethiopian organizations engaged in the onshore ISDO deals. The next chapter offers a discussion of it.

CHAPTER 3: CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.1. Introduction

Chapter 2 provides insights from IS outsourcing, knowledge transfer and utilization, and knowledge transfer in IS outsourcing literature. It also establishes the relevance of knowledge-based view (Hooff and Ridder, 2004; Grant, 1996), and social exchange theory (Homans, 1958; Blau, 1964; Cook, 1977) as relevant theoretical basis to unravel the knowledge related factors and their relationships to explain ISDO success. Moreover, it identifies the need to augment the observations from the literature review and theories with local insights. Therefore, this chapter starts with the discussion of the findings from an exploratory study before presenting the conceptual framework, and hypotheses development.

The rest of the chapter is organized into five sections including this introduction. Section 3.2 presents a discussion of the exploratory study. Section 3.3 focuses on a discussion of the theoretical background. Then, Section 3.4 presents the conceptual model and discusses the hypotheses of the research model. The final section (Section 3.5) summarizes the chapter.

3.2. Exploratory Study

The purpose of the exploratory study was to enrich the understanding of onshore ISDO success from knowledge-related perspective and to gain insights to inform the development of the conceptual model and the research instrument. The exploratory study is based on face-to-face interviews conducted with project managers of client and vendor organizations involved in onshore ISDO deals in Ethiopia (see Table 3.1 for the profile of interviewees).

This section covers the conduct and outcomes of the exploratory study. Sub-section 3.2.1 outlines the aim and objectives of the exploratory study. The research methodology with respect to the qualitative study is briefed in Sub-section 3.2.2. Then, a discussion of the findings of the exploratory study is made (Sub-section 3.2.3), and the implications of those findings to the current study (Sub-section 3.2.4) is followed.

3.2.1. Aim and Objectives of the Exploratory Study

The aim of conducting the exploratory study was to gain lessons and insights to inform the development of the conceptual model and the research instrument. Specifically, the exploratory study had the following four objectives:

- to understand the knowledge management context of onshore ISDO relationship in Ethiopia;
- verify the insights obtained from the literature that make up the conceptual framework;
- better understand dyadic level constructs and mutual ISO success and its indicators;
- identify additional insights from the analysis of the qualitative data.

The insights gained from the qualitative study inform the development of the final conceptual model and the instrument. When necessary, the insights gained from the study would be used to validate and provide an additional explanation for the quantitative findings.

3.2.2. Research Methodology

This section discusses the research methodology involving the data collection techniques used (Sub-section 3.2.2.1), the technique employed for qualitative data analysis and interpretation (Sub-section 3.2.2.2), and reliability and validity issues (Sub-section 3.2.2.3).

3.2.2.1. Data Collection Techniques

The qualitative data of the exploratory study was collected using semi-structured interviews and through examining documents. A qualitative approach using semi-structured interviews was chosen to address the research questions. A semi-structured interview is an effective data collection technique as it allows a researcher to capture research participants' interpretations and their experiences related to the problem under study (Creswell, 2009). Furthermore, this technique is appropriate for raising both open-ended and closed-ended questions to better elicit the views and opinions of participants. Besides face-to-face interviews, written documents were devised including minutes of meetings and unpublished study reports. Documents are regarded as an important means of data collection (Blumberg et al., 2011; Creswell, 2009; Saunders et al., 2009) to corroborate and augment evidence from other sources (Yin, 2009). For example, the interview data were complemented with minutes of meetings and reports.

To identify interview participants, first, a list of vendors from the Communication and Information Technology Standardization and Regulation Directorate (CITSRD) on August 19/2016. The contact details of the vendor organizations were obtained from this office. This office also made clear that they maintained a database of vendor organizations that are given licenses for software development in Ethiopia, but in the actual work environment, a vendor may be engaged in other business activities such as network installation and sales of computers. Second, two initial interviews were conducted with team leaders from two government organs: the E-Government Directorate of the Ministry of Communication and Information Technology (MCIT) and Addis Ababa City ICT Development Agency. These two government organizations are responsible for coordinating and supervising a large number of outsourced IS development projects of public sectors at the federal and city levels, respectively. Therefore, data related to ongoing projects and recently completed projects were collected following the two interviews. Besides, the specifics of data about ISO projects undertaken by their respective vendors were obtained. Third, a purposive sampling technique was adopted to select vendor organizations. Fourth, we snowballed to the clients of the vendors and asked their participation in the research project. Finally, ten organizations (four vendors and six clients) that have completed at least one ISO project were chosen. The profile of the interviewees is shown in Table 3.1.

Table 3. 1 Profiles of Interviewees

Organization	Project Role	Position of the Interviewee	Date of Interview
Client U	Project Manager	Junior Programmer	6/04/2017
Client W	Project Manager	ICT Director	15/03/2017
Client X	Project Manager	IT Unit Head	27/03/2017
Client Y	Project manager	Senior System Analyst	24/03/2017
Client Z	Project Manager	Deputy ICT Director	28//03/2017
Client V	Project Manager	ICT Desk Business Process Head	11/05/2017
Vendor B	Project Manager	Chief Executive Officer	23/03/2017
Vendor A	Project Manager	Software Development Expert	20/03/2017
Vendor D	Project Manager	Senior Programmer	25/042017
Vendor C	Project Manager	Chief Executive Officer	11/05/2017

In order to obtain qualitative data, a two-step interview (i.e., face-to-face) was conducted. First, project managers (or individuals with an equivalent title) who have experience in managing ISO projects were interviewed from four vendor organizations (one participant from each organization). Then, the project manager of each vendor organization was asked to name his/her clients. Similarly, project managers or equivalent titles from six client organizations were interviewed after getting their lists from their respective vendors. In total, ten in-depth interviews were conducted with project managers of the participating organizations. During the two-step interview, both client and vendor managers were asked to answer questions related to their understanding of ISO success and its indicators, the contributions of knowledge transfer and utilization to ISO success, the types of knowledge that need to be transferred during their ISO deals, and influencing factors of knowledge transfer and its utilization. The interviews were conducted using an interview guide, see appendix 4.1a. Moreover, the ethical guidelines suggested by Wiles (2013) and Terrell (2012) were followed while conducting the interview. The interviews were conducted from March 15/2017 to May 11/2017 and each interview was lasting about one hour to 1.5 hours.

3.2.2.2. Data Analysis and Interpretation

The qualitative data were analyzed using a thematic analysis technique (Boyatzis, 1998). This technique allows a researcher to identify, analyze, and report themes or patterns in qualitative data (Clarke and Braun, 2017). The themes are the theoretical concepts of the research model. In brief, a theme "captures something important about the data about the research question, and represents some level of patterned response or meaning within the data set" (Braun and Clarke, 2006, pp.82). Thematic analysis method was chosen due to its flexibility in determining and analyzing themes in a variety of ways (Braun and Clarke, 2006). NVivo software (Version 11) was used to help facilitating the analysis of qualitative data. This software is selected because it is specifically designed for qualitative data analysis. Overall, four steps were followed to conduct thematic analysis. Which at the end lead to verify and identify the knowledge-related factors affecting the success of onshore ISDO relationships (i.e., *Sub-question 1*). The analysis also helps to achieve specific objective two in the bulleted list, i.e., verify the insights obtained from the literature that make up the conceptual framework and identify additional insights from its findings. Although the steps used in the thematic analysis of the qualitative data looked

sequential, they have iterative nature where moving back and forth is possible as needed throughout the steps (Costa et al., 2016; Braun and Clarke, 2006). The four steps followed are outlined below.

Step 1: Data Familiarization

At this early stage of analysis, a thorough understanding of the data was developed through transcription and translation of the interviews. The original interviews were conducted with Amharic language which was then directly translated into English, verbatim, by the researcher. The transcripts of the interviews of 10 respondents totaled 45 pages which constitute the corpus of analysis. This activity was carried out on Microsoft Word Office. These transcripts were read repeatedly to ensure their accurate translation and transcription. This step ended up with the generation of an initial list of ideas obtained from the data and identification of interesting aspects in the data that may help in developing themes (Braun and Clarke, 2006).

Step 2: Generating Initial Codes

This step deals with the production of initial codes from the data. Codes refer to "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p.63). The transcripts were imported into the NVivo to start data coding. In this study, data analysis for generating codes was guided by both theory-driven and data-driven approaches. In the theory-driven (or deductive) approach, codes are identified in advance from the theoretical framework of the study. In other words, a researcher approaches the data with his/her specific questions in mind that he/ she wish to code around (Braun and Clarke, 2006). Thus, using this approach, each code was matched with data extracts that demonstrate the code, and all data extracts were collated together within each code. Data extract describes an "individual coded chunk of data, which has been identified within, and extracted from, a data item" (Braun and Clarke, 2006, pp.79). However, the theory-driven approach fails to take account of emergent codes generated while working on the raw data. Therefore, the data-driven (or inductive) approach supplements the limitation of the deductive approach as it allows the generation of initial codes from the data (Costa et al., 2016). The coding at this stage was initially done manually by using tables and highlighters to indicate potential patterns. See Table 3.2 for an example of codes used for a short segment of data.

Then, using NVivo software, initial codes were created on nodes with the help of the node menu and all data extracts were kept under each node. Nodes store initial codes and themes. Similarly, a long list of codes was generated for the factors affecting knowledge transfer and utilization, the effect of knowledge transfer and utilization on onshore ISDO success, and ISDO success dimensions or indicators.

Table 3. 2 Data Extract with Codes Applied for Knowledge Types

Participant	Data Extract	Initial Code
V_B	we need client's requirements, organizational policies, working procedures, and organizational regulations to be transferred to us. Nevertheless, we don't have other knowledge transferred to us specifically software development methods and project management knowledge.	<ul style="list-style-type: none"> • client's requirements • organizational policies • working procedures • organizational regulations • software development methods • project management knowledge
C_W	The newly implemented system is not working with the existing hardware and software system we have for running our daily operations.	<ul style="list-style-type: none"> • IT infrastructure
C_V	Programming was done by the vendor team at their own office or work place. Thus, there is no knowledge transfer from the vendor related to software coding.	<ul style="list-style-type: none"> • Software programming knowledge

Step 3: Theme Development

At this step, coded initial nodes on NVivo were analyzed to identify significant broader patterns of meaning (or main themes). This involves sorting the different codes into main themes and sub-themes and collating all the relevant coded data extracts within the identified themes (Braun and Clarke, 2006). Similar to data analysis for generating codes, the identification of themes or patterns within the data were guided by both inductive and deductive approaches. In other words, with a deductive approach, attention is given to themes that are identified earlier from the researcher's theoretical framework. In contrast, using an inductive approach, themes are identified from the data themselves. The initial coding using NVIVO began with the interview questions (see Appendix 4.1a, Section B) that were formulated based on figure 2.2. As a result, the preliminary analysis came up with 4 main themes/categories (Client Perspective, Vendor Perspective, Client-Vendor Perspective, and Project Perspective) with their sub-themes/sub-categories for ISO success dimensions, 4 main themes/categories (Client Perspective, Vendor Perspective, Client-Vendor Perspective, and Project Perspective) with their sub-themes/sub-categories for the contribution of knowledge factors to ISDO success, 3 main themes/categories

(Client Perspective, Vendor Perspective, and Client-Vendor Perspective) with their sub-themes/sub-categories for factors affecting knowledge transfer, and 5 main themes/categories business knowledge, information systems development process knowledge, organizational knowledge, process knowledge, and project management knowledge) with their sub-themes/sub-categories for types of knowledge to be transferred during the outsourced information systems development projects, see appendix 4.1b.

Step 4: Reviewing Themes and Producing Report

This step involves reviewing and refining the already-existing themes (Braun and Clarke, 2006). For example, ensuring whether each candidate theme was supported by enough data; forming one theme by combining two separate themes; dividing a theme into separate themes; and so on.

Overall, concerning the factors affecting knowledge transfer, the findings from the analysis of the qualitative data using a deductive approach show that three knowledge-related factors, namely mutual absorptive capacity, mutual competence trust, and mutual learning intent were supported by enough data (see Section 3.2.3.4 for details). Mutual disseminative capacity was a newly emerged factor affecting knowledge transfer from the data analysis, using an inductive approach. Thus, it was made to be incorporated into the revised conceptual research model (see Figure 3.1). However, only the competence trust dimension of trust is supported by the qualitative data as a knowledge transfer influencing in the ISO context of Ethiopia. Nevertheless, three variables were dropped from the preliminary conceptual model (perceived value of knowledge, knowledge complexity, and knowledge tacitness) due to their lack of enough supporting data. Moreover, this final reviewing themes step came up with 5 main themes/categories for mutual ISO success dimensions, see Sub-section 3.2.3.3.

3.2.2.3. Reliability and Validity

Two primary qualitative validation issues were considered for the exploratory study: reliability and validity. Reliability is related to the quality of measurement. To ensure the reliability of qualitative data, suggested reliability procedures by Creswell (2009) were taken into consideration. These are the following:

- checking of transcripts to avoid mistakes during their transcriptions. As mentioned in Step 1 of Section 3.2.2.2, the transcripts of the interviews of 10 respondents totaled 45 pages.

These transcripts are checked repeatedly for their accurate translation and transcription. Section 3.2.2.2 provides further details.

- make sure that the definition of codes given is consistent during the process of coding. This can be achieved by constantly comparing data with codes and writing memos about the codes and their definitions.

On the other hand, validity is defined as "the extent to which data are plausible, credible, and trustworthy, and thus can be defended when challenged" (Venkatesh et al, 2013, p.34). Basing Creswell's (2009) suggested validity strategies in a qualitative study; the following strategies were implemented:

- I. triangulation of data by collecting data through interviews and document analysis.
- II. informants were made to check the accuracy of the researcher's interpretation of their reality and meanings. This was accomplished by an ongoing dialogue with participants and providing them an opportunity to comment on the themes and the findings.

3.2.3. Findings and Discussion

This specific section provides a detailed discussion of the findings of the exploratory study. Sub-sections 3.2.3.1 and 3.2.3.2 cover the context of onshore ISDO context and knowledge-related practices in onshore ISDO relationship in Ethiopia. Then, a discussion of mutual ISO success indicators from the respondents perspective is made in Sub-section 3.2.3.3. Sub-section 3.2.3.4 covers the key factors affecting knowledge transfer and utilization in onshore ISDO relationship in Ethiopia

3.2.3.1. Onshore ISDO Context in Ethiopia

Participants of the study were asked to share their practical experiences related to ISO and knowledge transfer and utilization in the context of Ethiopia. Related to ISO practices in Ethiopia, there are a number of problems affecting both the software companies (vendors) and outsourcing organizations (clients) in satisfying the growing demands. Problems on the vendor side include a shortage of knowledgeable and skilled manpower, staff turnover, lack of experienced staff, and immature outsourcing practices. A vendor with manpower lacking rich knowledge and skills will have a shallow knowledge of IS development. Thus, it has an impact on the quality of knowledge to be transferred and the product to be developed and which in turn

has an effect on the success of the entire project. Pertaining to the shortage of knowledgeable and skilled manpower, the interview with the Project Manager of Client V said the following:

Most local software companies are one-man or one-woman companies. For a given IS development project, an individual acts as a system analyst, a designer, a programmer, a system tester, a project manager, etc.

Staff turnover is another problem area identified in the exploratory study. Unless the gap created by staff turnover is filled, the successful transfer of knowledge between the client and the vendor will be affected. About the vendors' staff turnover, the Project Manager of Client W expressed the situation as follows:

When a project member/manager of the vendor leaves his/her jobs, a new staff is assigned and the vendor sends this employee to our organization to let him/her have the necessary knowledge of the project. The new project member needs too much time to know our needs and the project objective.

On the client-side, the main problems are staff turnover and management change (public sector organizations), lack of basic computer skills, lack of awareness about the values derived from IS/IT investment, and immature outsourcing practice. While the project is in progress, the end-user or IT staff of the client organizations may leave the organization. Such staff turnover has an impact on gathering detailed requirements and project follow-up. In this respect, the project Manager of Client Y said the following:

[...] mostly, the IT unit head represents our organization and acts as a project manager. Documents related to the project such as signed contracts, requirements, and project reports were maintained by this leader. If this employee leaves his/her job, no one can get these documents.

A supporting view for the above response is given below by the project Manager of Vendor C:

There is staff turnover in the client organizations. There are cases that an IS/IT staff who was getting the necessary training at the very beginning of the project left the organization in the middle of the project activity. This made us providing repeated training which is costly for us and affects project progress.

In addition to staff turnover, management changes in the client organization affect the ongoing activities of the outsourced IS development project. In this regard, the Project Manager of Vendor B commented on the following:

When there is a management change, the new management does not know the project so that they are not in a position to sustain the on-going project activities or refuse to receive the outsourced IS project, if completed. In this case, we are forced to offer extra training to the new management which is time taking and costly for us.

Concerning the value derived from their IS/IT investment, the awareness is low in most private sector clients. They consider IS/ IT investment as a one-time expense. Project Manager of Vendor D puts it in his own words as:

[...] a client prefers investing a huge sum of money on a plot of land to investing on IT/IS.

As to the clients' outsourcing practice, some organizations were outsourcing their IS function/s without doing proper due diligence. Vendor selection was centered on the least cost proposed by contenders. Vendors are selected by a client without knowing much about the vendor (its reputation, experience, technical capability, financial strength, etc). Besides clients, vendors need to undertake due diligence before entering into a contractual agreement (Marchewka and Oruganti, 2013). However, some vendors are failed to give due emphasis to due-diligence. After receiving the tender document, the vendor needs to have a thorough revision and understanding of the tender document to have a clear picture of the client's needs and systems requirements. As a result, they can make self-evaluation of their technical capability and able to propose a technical solution and the associated costs. The interview with the Project Manager of Client Z supports this point:

A vendor is selected by the principle of the least project cost proposed to accomplish a given IS outsourcing project. After signing the contract, the vendor may realize that the project is beyond its technical capability, requires additional costs, and then the vendor forced to withdraw from the contract.

Though IS/IT departments of client organizations have limitations to develop IS in-house and considers outsourcing as a viable option, their in-house IS development efforts are not supported and encouraged by top management particularly from public sector organizations. The client's in-house IS development capability needs to be properly evaluated before outsourcing decisions. It is the IS personnel that will involve in the outsourced project representing the client organization. Therefore, it may have an impact on their motivation to participate and learn from the project if the client project manager and/or project team members perceived the project can be undertaken by their internal staff. In this regard, the interviewee from Client Y responded the following:

[...] top management does not encourage software applications developed by internal staff. They are refused to allocate a budget or they are reluctant to reward the already developed software by the internal staff at a lower price. Instead, top managers prefer to get the same

application software being developed externally by allocating a huge sum of money. Therefore, the fate of software that is developed in-house will be for the consumption of the unit's quarter or annual report.

In addition to the above problems, the local outsourcing and software development sectors in Ethiopia are characterized by: lack of meaningful government support to the sectors; lack of favorable policy; absence of active professional association; absence of private to private partnerships; and absence of quality compliance certification program such as ISO-9001 and ISO-25000:2005, which helps them to align their organizational processes to the requirements of those standards.

With respect to the government's support in the ICT and outsourcing sectors, Project Manager of Vendor D described:

Companies engaged in software development do not have tangible assets but intangible assets (knowledge). We have practical problems to get loans from Banks when compared with business companies engaged in other investment sectors. The technological artifacts we have at hand shall be seen as an asset and let us getting loans from Banks.

The above claim is supported by MCIT and ICT-ET (2016) and they indicate that indigenous Ethiopian IT companies face many barriers: the absence of fair and equitable software tenders and evaluation; absence of grading of domestic software development companies; ICT procurement/tender documents favor international players; domination of the local market by international companies; and absence of investment loans and other incentives such as land lease, tax incentives and tax holidays.

The existence of professional associations is given due attention to tackle the practical problems faced by the local software development sector and IS outsourcing market. Thus, Information and Communication Technology Association-Ethiopia (ICT-ET) was established in 2010 as the industry association for ICT. Even though an attempt was made by ICT-ET to study the current practical problems of ICT in general and software development and IS/IT outsourcing in particular, the actions taken are not satisfactory to deal with the problems and advance the software development and outsourcing sectors. Supporting this point, the Project Manager of Vendor D said the following.

There is no active professional association which is decisive for the growth of software development and IS development outsourcing sectors.

In addition to the roles of government and professional associations, working in a partnership is important for vendors for developing their capabilities and for the growth of the domestic ISO sector. About the necessity of forming a partnership, the Project Manager of Client V responded:

Local software companies are not creating a partnership with each other to work on large IS projects. If they are working in a joint, they can become better competent in the local as well as foreign IS outsourcing market.

In their report, MCIT and ICT-ET (2016) indicate that foreign companies are allowed to get funds or loans to undertake their proposed projects with public agencies. Conversely, indigenous Ethiopian national players have not been given such opportunities even to work under a public-private partnership (PPP) arrangement. In sum, the outsourcing industry in Ethiopia is immature and lacks a competitive skills base.

3.2.3.2. The Context of Knowledge Management in Onshore ISDO in Ethiopia

As the criticality of knowledge in outsourced ISD projects is emphasized, knowledge management has an important role in onshore ISDO success. This section presents the findings and discussion of the types of knowledge, knowledge transfer between the outsourcing partners, the mechanisms employed of the transfer of the required knowledge, and the utilization of knowledge in the onshore ISDO practices of Ethiopian organizations.

Initially, respondents were made to reflect on the knowledge that they required from each other during the course of the project. Accordingly, the Project Manager of Vendor B mentioned the required knowledge from their clients as:

We need the client's requirements, organizational policies, working procedures, and organizational regulations to be transferred to us. Based on this knowledge, we develop the system for the intended purpose.

Moreover, literature review has shown that knowledge of the client's existing systems and IT infrastructure is important for vendors to make decisions on the technical choice for the new system. However, the exploratory study shows that vendors have a limited understanding of the clients' existing systems and IT infrastructure. About this, Project Manager of Client W describes the situation as:

The newly implemented system is not compatible with the existing hardware and software system we have for running our daily operations and it also lacks international standards in searching and retrieving documents from our library collections.

In the case of the matured outsourcing market, clients possessed their information systems development methodology and rich know-how. This knowledge is shared with their vendors to help standardize the vendors' development processes (Su and Mao, 2013). Nevertheless, in this study context, some vendors consider their clients as lacking technical knowledge. Moreover, some clients are non-IS/IT experts. Thus, vendors are not expecting knowledge related to information systems development approaches, methods, techniques, and tools from their clients. Project manager of Vendor B and Project manager of Vendor A describe the absence of such technical knowledge transfer respectively as follows:

Except for acquiring the core business knowledge, we don't acquire any other knowledge like software development methods and project management knowledge from our clients to us. IT staffs of client organizations are lacking those mentioned knowledge (Project manager, Vendor B).

[...] as the client is non-IS/IT experts, there no transfer of knowledge related to programming and project management (Project manager, Vendor A).

The exploratory study also indicates that knowledge expected from clients is inadequate and unrelated. While preparing tender documents, requirements are copied from the Internet by some clients and they put them in bid document without considering their relevance to the requested new system. Project Manager of Vendor D noted:

When clients prepare their tender documents some clients copy and paste requirements directly from the Internet without considering their practical needs and requirements and these requirements are subjected for bidding.

For knowledge inadequacy, the Project Manager of Client Z commented the following:

[...] during requirements gathering, we faced difficulties to get documented work procedures/manuals about the specific unit of our organization that made a request for the new system to be developed.

In the case of clients from public sector organizations, two government organs are playing the role of consultant for outsourced IS development projects of public sector organizations at the federal and Addis Ababa city levels. The consultants initiate most IS development projects to improve public organizations' service delivery. However, the study shows that most projects initiated by the consultants are without the awareness and participation of the client's IT staff and end-users. After the contract is signed between the vendor and the consultant, the client's IT department is given the responsibility to follow up on the project and work with the vendor up to

the completion of the project. End-users are also naive to the initiated project and they are made to participate in the requirements gathering and training stages of the development process. In this regard, the Project Manager of Client W stated:

[...] We consultants initiated most of the city's IS development projects. We study the current system of an organization, propose a new system that will solve the problem, and prepare a project proposal for the client organization. If the proposal gets the acceptance of top management, we then prepare the bid document for vendor selection. The client's IT staff are made to follow up on the project once the project is signed with the right vendor. Similarly, end-users were made to participate in the training session of the implementation phase (Project manager of Client W).

Besides project initiation roles, the consultants were acting as a bridge between the client and the vendor and playing the role of technical evaluator. Project Manager of Client W described it as:

[...] we played additional roles such as project manager, make payments to the vendor when required, organizing workshops, and training, and participate in the technical testing and business case testing phase and make approval of system testing.

Furthermore, clients' project managers made to reflect on the knowledge that transferred from their vendors. Hence, the findings of the exploratory study show that the vendors' technical knowledge is important for IT technical staff, managers, and end-users (business professionals) of client organizations. At the very beginning of the project, project team members (IT staff) of clients are offered training and made to be acquainted with information systems development methods, tools, and techniques to be adopted by the vendor. According to the client's project manager, such types of knowledge good for project follow up, create a common understanding, and facilitate their interactions with the vendor. At the end of the project, IT technical staff and top managers of the client organizations are need knowledge about systems administration and security policy establishment. In addition, end-users require knowledge about the new system functionalities and how to apply the newly deployed system. In this regard, Project Managers of Client U and Vendor D described the following respectively:

There were prior training offered to us. These include an overview of development tools, system security, systems administration, systems configuration. Such types of training are good for the project to follow up and to have a common understanding, and it facilitates our interactions with the vendor.

We provide training on systems configuration and systems administration including user management, group management, and security policy establishment to IT staff and top managers of the client organizations. In addition, end users are trained about how to apply the new system that is developed by us.

However, the study shows that there is no knowledge transfer from the vendor related to programming or coding. In his own words, the Project Manager of Client V expressed the following:

[...] however, programming/coding is done by the vendor team at their organization's office or workplace. Thus, there is no knowledge transfer from the vendor related to programming or coding.

Furthermore, in the case of some clients from the public sector, the technical knowledge involving technical system testing and test case preparation is not transferred to the clients' IT/IS personnel. A consulting public organization is in charge of conducting technical testing of the newly developed software system on behalf of the client. Even the vendor's technical team was not invited while this test is done by this government organ. Project Manager of Vendor B puts the issue as:

[...] as the technical personnel of a consulting organization tests the system without our physical presence, we don't have any chance to sit together to discuss their technical evaluation. Following this test, we made informed and the client requested us for its amendments otherwise there are not in a position to accept the final system[...].

When the requisite knowledge possessed by the client and the vendor are transferred and properly combined, another important new project-specific knowledge such as requirements specifications, design models, data flow diagrams, source code, and test cases are created (Pawlowski and Robey, 2004; Levina and Vaast, 2005). In their outsourcing engagements, the client and the vendor have agreed in their contract that the vendor gets the project fund based on a deliverable it produces during the development process of the system. However, our study shows that the quality of deliverables produced is questionable and it is done only for getting the intended payment at that specific phase. Pertaining to this issue, the Project Manager of Vendor A responding as:

We signed a contract with our client to accomplish the project with a certain budget. This budget will be obtained in phases. To get the payment, we have to come up with a deliverable and we will be expected to show this to our client. We don't worry about the quality of the deliverable produced, but to persuade the client for getting the budget at that specific phase. As a professional this is not good.

From the above interview, it is reasonable to raise the question, *why is the client accepting a deliverable without considering its quality and approving it for its payment?* The possible

answers to this question may be the client's lack of understanding about the deliverables or product produced at the end due to the lack of technical knowledge.

The transfer of the necessary technical knowledge to the client is highly required as it will facilitate the delivery of the project and it can be insured to the successful application of the information systems products (Wang and Gan, 2010). Nevertheless, the exploratory study shows that there is an insufficiency of knowledge transfer from vendors to clients. Clients have inadequate knowledge about the newly developed information system and lack the confidence to accept it. Some IS/IT staff of client organizations (public sector) became reluctant and afraid of signing and receiving the completed software project from their vendor though the client's technical staff has been involving the project undertakings. This mainly because IS/IT personnel lack the requisite technical knowledge to decide on the quality of the newly developed software system. The interview with the Project Manager of Vendor B illustrates this point as follows:

Project closing becomes a headache for us. There is a condition that we installed the software to end-user and making it to be used for about six months. After getting positive responses from the end-users, the IS/IT personnel becomes comfortable to sign and accept the software that we have already developed.

Project closing is also seen as a risky task for some clients. The responsible IS/IT personnel thought that he/she will be accountable for failures of the new system following its implementation. Project Manager of Client U puts it precisely as:

Even if the new system has a good quality, the responsible IS/IT personnel is resisting for its acceptance due to the fear of accountability.

Clients particularly from public sector organizations lack the interest to participate from the very start of the development process of a system as well as resist using the newly deployed information system. They are reluctant for two basic reasons. First, participating in the system development and utilizing the new system is considered as an additional task or a burden for them. Second, they are suspicious of technology as they are afraid something is behind it, more specifically the old-aged civil servants. The following two statements illustrate the clients' lack of interest to participate with the vendor and their refusal for working on technology:

There is a lack of interest on the clients' side to participate in the development process of a system, when required. When a vendor demonstrates a prototype to a client for further improvement, the concerned individuals are not willing to make their reflections on it. Rather, they considered such participation as extra work or a burden for them (Project Manager, Client U).

End-users resist working on the newly implemented system. According to them, utilizing the new system is an additional task. When they are forced to apply the new system, they work on the old system (manually) side by side (Project Manager, Vendor C).

From the analysis of the qualitative data, six types of knowledge emerged. These are business domain knowledge, technical knowledge, information systems application knowledge, information systems development methodology knowledge, organizational knowledge, and newly generated project-specific knowledge. The discussion on business domain knowledge and technical knowledge are given in Chapter 2.

In relation to the technical knowledge, the practice in our study shows that vendors paid less attention to the knowledge about the clients' existing systems and IT landscape which was resulted in systems incompatibility and unused information systems. Organizational knowledge describes the knowledge about the client's internal organizational structure, long-term strategy, the constraints imposed by the government, and the market challenges that the client is facing (Williams, 2011; Bassellier and Benbasat, 2004). Knowledge related to the long-term business strategy of clients is important for vendors as it helps them to deliver quality services and software products (Yun, 2009; Lacity and Willcocks, 2009). Thus, vendors are supposed to give due attention to acquire this knowledge from their respective clients to improve the quality of the final product.

Information systems application knowledge is the other relevant knowledge in the context of information systems outsourcing. Information systems application knowledge embodies knowledge of typical information systems applications including their structure, functionality, and use (Iivari et al., 2004). According to Santhanam et al. (2007) knowledge related to information systems usage practically demanded by clients includes: (1) the steps or procedures relating to accomplishing a system-related task; (2) knowledge of system components/modules; (3) the business rules incorporated into the system, or the way to adapt or customize the system or system usage to facilitate the client-specific need. However, the exploratory study showed that the knowledge about how to use the newly developed information system and its technical possibilities is insufficient in practice. However, the knowledge about how to use the newly developed information system and its technical possibilities is insufficient in practice. This is mainly because end-users were made to get trained the technical knowledge on how to use the system without the understanding of why they use the given information system in the first place.

According to Chen and Chen (2006) in a technology-dominated world, it is very essential to let people know 'why' they use a technology besides making them know 'how' to use a given technology. Therefore, the knowledge regarding know-why of using a new system or technology should get equal emphasis more specifically in a developing country like Ethiopia. Having this knowledge, end-users became motivated to collaborate and express their needs and requirements to the vendor as well as to acquire knowledge about information systems usage.

Another category of knowledge in ISDO is information systems development methodology knowledge (ISD). ISD methodology helps system developers in their efforts to develop a new innovative information system. ISD methodology knowledge embodies knowledge of development approaches, methods, techniques, and tools used in information systems development (Iivari et al., 2004).

On the other hand, organizational knowledge describes the knowledge about the client's internal organizational structure, long-term strategy, the constraints imposed by the government, and the market challenges that the client is facing (Williams, 2011; Bassellier and Benbasat, 2004). Knowledge related to the long-term business strategy of clients is important for vendors as it helps them to deliver quality services and software products (Yun, 2009; Lacity and Willcocks, 2009). Thus, vendors are supposed to give due attention to acquire this knowledge from their respective clients to improve the quality of the final product.

The last knowledge type is a newly generated project-specific knowledge (e.g., intermediate ISD artifacts). Besides the available knowledge of client and vendor, project-specific knowledge is created when specialized knowledge, ideas, and viewpoints of each party are combined collaboratively during the development of an information system project (Wahlstedt, 2014; Tiwana and McLean, 2005; Chang and Parikh, 2006). In the ISD context, the new knowledge involves; for example, creativity and problem-solving (Pee et al., 2007; Wahlstedt, 2014) and it can have considerable impacts on intermediate project outcomes as well as the quality of the resulting system (Pee et al., 2007; Chang and Parikh, 2006). In short, intermediate ISD artifacts (e.g., requirements specifications, architectural models, and test plans) are typical examples of the new project-specific knowledge created at the project level. Thus, a proper understanding and management of these newly generated knowledge elements are essential for successful development outcomes.

After identifying the types of knowledge needed to be transferred and utilized during the course of the outsourced ISD project, respondents were also asked about the mechanisms they employed for transferring the required knowledge between them. Consequently, the findings indicate that interviews, meetings, workshops, formal training, prototypes, demonstrations, and written documentation such as requirements documents, test reports, and written user manuals are the main knowledge transfer mechanisms between the client and the vendor organizations. The interview with the Project Manager of Vendor B indicates the knowledge transfer mechanisms that are common in the IS outsourcing practices of Ethiopian organizations.

As a vendor, we conducted interviews and organize workshops to obtain clients' needs and requirements. Then, we developed a prototype and made demonstrations to the stakeholders. We collected their feedback following the demonstration and clients were also sent their formal feedback, through an official letter that was accompanied by detailed documents. Similarly, we provide training and manuals to our clients to transfer our knowledge to our clients (Project Manager, Vendor B).

However, our study identified that there is a high reliance on formally written/codified knowledge and the mechanisms that support such knowledge transfer. In the above response, it is stated that feedbacks from workshop participants are documented and sent back to the vendor through an official letter of the clients. The response of another interviewee also shows that at the systems testing stage, a client prepares a list of identified bugs/errors and sent it to the vendor with an official letter for their right action. The interview with the Project manager of Client Y explains it as:

Before the implementation of the system, my department did the technical as well as the business case testing. We were producing around 47 cases of testing reports and it was submitted to the vendor for the necessary adjustment. After the vendor submitted the document, then we will verify the test cases one by one.

The high reliance on the officially documented knowledge transfer is important for two reasons. First, it provides confidence for the vendor while doing its development activities. Second, it allows the client to assure its feedbacks and requests are addressed properly by the vendor. Project Manager of Client X explains the rationale behind for dependence on officially written documentation exchanges:

Officially documented requirements, feedbacks, and test reports are good for us. It provides confidence for the vendor for having an official agreement from the client and proceeds its work. The test reports generated by our technical staff allow a vendor to address errors/bugs point by point as mentioned in our reports. The vendor in turn sends an official document back to the client by indicating all the identified errors/bugs are addressed.

In sum, the mechanisms employed by outsourcing parties for transferring the different types of knowledge are grouped into three categories based on Madsen et al. (2015). These include interaction-oriented, artifact-oriented, and interaction-and-artifact-oriented mechanisms. The first category, interaction-oriented mechanisms aim at transferring knowledge through the interactions of the client and the vendor. This type of knowledge transfer mechanisms allows the outsourcing partners to get the necessary knowledge from each other, to raise questions about unclear concepts to each other, and to detect and clarify potential misunderstandings during the transfer of knowledge. Accordingly, interviews, meetings, workshops, and formal training are identified as interaction-oriented transfer mechanisms from the exploratory study. The second artifact-oriented mechanisms intend to transfer knowledge through the already existing artifacts that require the low involvement of actors. As a result, developed software systems and written documentation such as requirements documents, test reports, and written user manuals are categorized as artifact-oriented knowledge transfer mechanisms in the outsourcing practice of Ethiopian organizations. The third category, interaction-and-artifact oriented mechanisms combines both interaction-oriented and artifact-oriented transfer mechanisms that enable the vendor to detect and get feedback from its client regarding what has been clear and unclear and what has left out while producing a deliverable at each development phase. Hence, the demonstration of a prototype is found to be the main interaction-and-artifact oriented mechanism in the context of knowledge transfer in Ethiopian IS outsourcing.

Moreover, outsourcing partners in Ethiopia are heavily relying on formally written/codified knowledge and the mechanisms that support the transfer of such type of knowledge. However, excessive reliance on formally documented knowledge transfer is inadequate means as some can only be transferred through the direct interactions of clients and vendors (Duggan, 2015; Williams, 2011). Therefore, outsourcing partners need to use of appropriate transfer mechanisms to help facilitate knowledge transfer to each other. For instance, personal experience and direct interaction with the client organization will allow the vendor firm to gain a deeper understanding of the client's business process knowledge. Direct interaction with the vendor will also allow the client's technical team to gain knowledge related to systems testing such as preparation of test cases, testing procedures, and techniques. Hence, paying due attention to mechanisms supporting the transfer of tacit knowledge is also very important.

3.2.3.3. Onshore ISDO Success Indicators

Besides the literature reviewed in Chapter 2, respondents were interviewed how they conceptualize and measure IS outsourcing success to better comprehend IS outsourcing success dimensions. In spite of the fact that clients and vendors have different views on IS outsourcing success, this study focuses on the common perceptions of success deemed to be leading to mutual (rather than one-sided) benefits. From the exploratory study, we found that satisfaction with the developed system, meeting project schedules, achievement of project objectives, derived business values, and satisfaction with the outsourcing relationship as mutual onshore ISDO success indicators. Each of the onshore ISDO success indicators is briefly discussed below.

- **Satisfaction with the Developed System:** the exploratory study indicates that satisfaction with the developed system is an indicator of success. The production of a usable product is beneficial not only to the client but also to the vendor. Project Manager of Client X said:

[...] thus, end-users are currently using the system in their daily activities and they are satisfied with it.

Developing a system that satisfies a client is seen as a way of measuring development capability and gaining reputation by vendors. The interviewees from Vendor D and Vendor B describe the matter respectively as follows:

In my opinion, ISD projects are successful when the developed systems are usable, i.e. they are utilized by the client organizations for its intended purpose. The developed systems give front line services to our clients. This makes us very happy. We have evidences that support the argument I made ISD as success (Project Manager, Vendor D).

In the absence of a standard guideline for transferring requirements to the vendor, but delivering a usable system is, therefore, a success for us (Project Manager, Vendor B).

- **Meeting Project Schedule:** Completing a project at agreed time in a contract is an indicator of success. The findings of the exploratory study indicate that outsourced information systems development projects are characterized by schedule overruns that hinder the timely delivery of the project which in turn make vendors incurred additional costs and create frustration on the client sides. Closing a project based on its schedule is a more challenging task for a vendor specifically having clients from public sector organizations. The responses from the Project Manager of Client W and Project Manager of Vendor B better explained the issue respectively as follows:

Completing the project at the right time is important for success. Our vendor was highly motivated at the launching of the project but their motivation was decreasing through time and the project took 5 years for its completion. We were frustrated and we attempted to cancel the project [...] (Project Manager, Client W).

When there is a management change in public sector organizations, the project activities become jeopardized. Even we already completed it, the new management won't accept our completed IS project and close the project contract. In this case, we are forced to offer extra training to the new management which is time taking and costly for us (Project Manager, Vendor B).

- **Achievement of Project Objectives:** Outsourced information system development project is undertaken to achieve a project objective conforming to specific requirements and quality. Thus, the realization of this objective is a success for outsourcing partners. However, our exploratory study shows that dissatisfaction of partners is common as outsourced projects failed to achieve the stated objectives. For instance, the planned rollout was postponed due to the impossibility of scaling the system to all the client's office sites. Responses of two project managers are taken to support this assertion:

The objective of the project was to develop an integrated library and document management system at the national level by meeting international standards for allowing us maintaining huge collections and providing effective and efficient services to our citizens as well as to foreigners. However, the project in the end was not achieved its objectives. Thus, we are forced to prepare another bid for foreign software companies (Project Manager, Client W).

Upon its completion, the completed IS project was intended to be rolled out at 127 sites but so far it has been implemented for 25 sites (Project Manager, Client U).

- **Derived business values from the outsourcing:** Outsourcing relationships enable partners to derive values from their outsourcing initiatives (Teo and Bhattacharjee, 2014) such as making profit, improved quality, increased efficiency, increased effectiveness, and growth or expansion. Thus, the value an outsourced IS project brings to the outsourcing partners needs to be considered while determining IS outsourcing success. The interview with the Project Manager of Client X underscores the values derived from outsourcing and said the following:

Once the developed system is implemented in our organization, the software becomes the property of the vendor. We are agreed that when other branches of ours need this information system, the vendor will install it at a cost of 20,000 Birr per branch. Therefore, the vendor can maximize its profits.

Asked about the value comes to the client when the system is being used, Project Manager of Client X also described:

We are using our information system to improve our services and enable citizens to follow up on their cases online.

According to Project Manager of Vendor B, the increase in the number of clients of the company is considered as a value created from their outsourcing arrangements. The manager stated:

Above all, we have more than 600 domestic customers/clients in the past twenty years. We are very happy and proud of having such a number of customers who are utilizing our IS products that have been developed through outsourcing relationships.

- **Satisfaction with the Outsourcing Relationship:** The exploratory study shows that satisfying the information systems (IS) outsourcing relationship is important for the two parties engaged in the outsourcing relationship. After some years, the implemented system will not satisfy the growing or changing needs of the client. Thus, the system needs to be upgraded to cope with the changing environment. The system upgrading project can be awarded directly to the vendor by the client, which important for the vendor. Furthermore, the good relation the vendor has with the client makes it a better candidate for other outsourcing project/s of the client. Similarly, a client saves time and cost in searching, inviting, and selecting a vendor; and a client gets immediate technical support with a minimal cost from the vendor when required. Project Manager of Client X suggests that satisfaction with the IS outsourcing relationship has mutual benefits. In his own words:

Since the vendor is the only company working with us on this particular project since 2000, we didn't invite other local software companies for the system upgrading project. Instead, this specific vendor made informed for the project and came up with a list of requirements to be considered during the upgrading of the system. Then, we negotiated with the vendor for its cost. After negotiation, we signed a contract with the vendor. As a result, we were in a position to save time and cost of searching, inviting, and selecting a vendor. Such a continuing relationship also makes us beneficiary as the vendor didn't ask for any payments for their technical support though the contract is over for the mandatory technical support. Similarly, the vendor provides us an immediate response when we encountered a problem while the system is in its daily operations.

Conversely, the study shows that a poor relationship between the outsourcing parties leads to the reduced interest of parties for working together in the future. The project manager of Client V described it as follows:

In one meeting, due to the dissatisfaction with the vendor, I heard from the top management that a software development company G will not participate in the would-be outsourcing tender of the client organization.

Respondents further stressed the importance of developing a mutually beneficial relationship with outsourcing partners. In this respect, the Project Manager of Vendor B commented:

The client was sticking to the agreed project budget which was signed in the contract. In terms of project costs, we incurred additional costs for the completion of the project; we were not making a profit from the project [...] if things are not improved, and our fate will be out of the software development market, closing our software development business, as we can't continue without making a profit.

Striving for one-sided benefit in an outsourcing relationship will decrease the vendor's motivation to come up with an innovative technical solution to the client's problem. According to Sparrow (2003) the tendency to create a "win-lose" position leads to resentment and loss of commitment which in turn leads to a conflicting situation rather than creating a collaborative atmosphere. Therefore, IS outsourcing success can be realized when the client and vendor are in a win-win scenario (Kern et al., 2006).

3.2.3.4. Factors Affecting Knowledge Transfer and Utilization in Onshore ISDO Relationship in Ethiopia

From the exploratory study, a number of factors that influence the transfer of knowledge between the clients and the vendors were identified. As this study mainly focused on factors named by both client and vendor representatives, a separate analysis of client-unique factors and vendor-unique factors that were raised by each outsourcing partner was not our intent. Instead, we took into consideration those practical factors commonly affecting both clients and vendors.

As a result, this section deals with the analysis of the key common factors influencing knowledge transfer that is mentioned by both client and vendor project managers following the interviews. These key common influencing factors include mutual competence trust, mutual absorptive capacity, mutual learning intent, and mutual disseminative capacity.

- I. **Mutual Competence Trust:** the existence of trust between outsourcing partners is one of the key factors for effective knowledge transfer (Ko, 2014; Park et al., 2014). This is mainly because information systems development is a knowledge-rich activity where clients and vendors rely on each other knowledge to get the system developed. The current outsourcing practice of Ethiopian organizations has shown that most clients lack confidence in their vendors' development capability to complete a project and provide the

required service quality. The lack of trust in the vendors' competence will decrease clients' motivation to acquire new knowledge and apply the knowledge received. In this regard, project managers of Client Z and Client U describe the absence of trust towards their outsourcing partners 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).

Augmenting the above responses, the 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.

The lack of trust between clients and local software development vendors attributed to the clients' bias towards foreign vendors and they often see local vendors as incompetent. Project Manager of Vendor B described this as:

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

In the eyes of vendors, clients are less experienced and lack IT technical knowledge. Project Manager of Vendor B replied, "[...] IT staffs of client organizations lack technical knowledge."

Vendors' lack of trust in their clients' technical knowledge may make knowledge transfer and utilization insufficient as it leads to disregarding of 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.

In addition, a vendor with a lack of trust in client's competence can lead to insufficient transfer of knowledge related to the use and the technical possibilities of the newly developed information system. In this regard, Project Manager of Client V described:

When a vendor considers us in lack of technical knowledge, the technical training to be offered to our IT staffs and end-users can get reduced in its content and become very short, which benefits the vendor as it reduces their incurred training costs.

In an exchanging relationship, partners' belief about each other's competence and reliability is vital (McAllister, 1995). In trustful relationship, partners are not openly challenging and resisting each other's knowledge and advice (Jain et al., 2015). In short, the findings of the exploratory study indicated that mutual competence trust influences successful transfer of knowledge between outsourcing partners.

II. Mutual Absorptive Capacity: absorptive capacity refers to a knowledge recipient's ability to recognize the value, assimilate, transform and exploit new external knowledge to outsourcing tasks (Cohen and Levinthal, 1990; Ko et al., 2005). In outsourced ISD projects, knowledge transfer is bi-directional and outsourcing partners play different roles. When a vendor transfers its knowledge, a client becomes a recipient and vice versa. As a result, effective transfer and utilization of the transferred knowledge demands absorptive capacity of partners (Easterby-Smith et al., 2008). A vendor with high absorptive capacity can better capture and understand client-specific knowledge and combine it with its technical knowledge to achieve project success. Conversely, a vendor with low absorptive capacity faced difficulties to properly understand the specific needs and requirements of a client and come up with unsatisfactory technical solution. In this regard, Project Manager of Client W commented:

We outsourced the IS project to cope with the current international standards and able to provide high-quality library services to our customers. However, the vendor was incapable of properly understanding and taking our requirements and made the expected 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.

The exploratory study also indicated that a vendor's software development staff plays the roles of systems analyst, designer, programmer, and tester for a specific project. A person who is knowledgeable and skillful in software coding (or programming) might not be effective in

capturing the stated requirements and successfully transforming these requirements into technical specifications.

Thus, vendors' lack of absorptive capacity is partly associated with the shortage of specialized personnel to perform the different activities of IS development. The 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 an impact on the outcome of the project.

The absorptive capacity of the client is also important for effective transfer and utilization of knowledge. A client with high absorptive capacity can actively participate in the technical test of the system and produce valuable test results which then make the system testing detailed and successful. Project Manager of Client X noted:

The vendor is not doing the technical test on its own. We identified the bugs and errors and we documented and delivered them to the vendor for the expected corrections. Thus, system testing by our technical team is valuable as it makes the system testing detailed and it serves as an input for the vendor to do their system testing effectively.

Another statement made by the Project Manager of Client X illustrates a client with a higher level of absorptive capacity can make critical evaluations and provide productive feedback on deliverables produced by the vendor during the ISD activities:

When the vendor comes up with a deliverable at each stage of the development, the client's technical team will have a look at it. If there are things to be improved, we sent it back to the vendor for the necessary changes or modifications. The finalized deliverable is then approved and signed by the client's technical team and its copies will be sent to the client's finance/budget office for the expected payments.

However, a client with a lower level of absorptive capacity is less likely to use the knowledge transferred from a vendor to its organizational purposes such as applying and sustaining the ongoing operations of the newly implemented system. The following two statements show the impact of the low level of absorptive capacity of clients on knowledge transfer and utilization:

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

There is 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 problems while using the newly implemented system though the technical support warranty expired [...] (Project Manager, Vendor D).

Thus, the findings of the exploratory study indicated that absorptive capacity is an important ability needed by both clients and vendors to ensure successful transfer and utilization of knowledge during the development of outsourced information systems projects. If one party's absorptive capacity is high and the other's is low, effective knowledge transfer and utilization will not be realized. Hence, mutual absorptive capacity is the other key factor impacting knowledge transfer and utilization in the onshore outsourcing relationship of Ethiopian organizations.

III. **Mutual Learning Intent:** ISO relationships provide a learning opportunity to involved parties (Teo and Bhattacharjee, 2014). In the ISO setting, the client is expected to learn technical knowledge and best practices from the vendor. Similarly, the vendor needs to learn the client's business environment. While outsourcing partners can acquire and develop the knowledge and skills they missed through learning, a partner needs to have the intent to learn from its counterpart (Hamel, 1991). Learning intent describes the extent of desire and will of an organization to learn from its partner during an ISO relationship (Simonin, 2004). Asked to comment on the practice of technical knowledge transfer to the client, the 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.

The above response shows that the activities of the vendors in transferring their technical knowledge produce satisfactory outcomes when the client has the intent to learn. Without the client's motivation to learn, only the vendor's effort is insufficient to guarantee successful 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.

On the other hand, the lack of motivation clients to participate in vendors' training sessions, the requisite knowledge to be transferred to clients (such as the use and the technical features of the new system) becomes ineffective and the implementation of the newly developed system will result in unsatisfactory outcome. Project Manager of Vendor C reiterates 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.

In addition, the exploratory study has shown that clients' staff are lacking the interest to learn and actively participate in the ISD process. Client's participation in the development process is considered as 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.

The above view is shared by a participant of the study from the vendor side and indicated that working with a vendor team is considered as an extra or secondary task by some project managers of clients, particularly those from public sector organizations. The following citation from project manager of Vendor D illustrates this point:

When we went to the client organizations for project related activities based on the appointment we made earlier, they missed the appointments due to their organizational meetings. Besides, they lack interest to participate in the development process of a system, when required. Rather, such participation is considered as extra work, burden for them.

Vendors were asked to name the mechanism/s if they devised to make clients participate and get motivated in their training sessions. However, the issue was the concern of a few vendors. In order to make trainees attend the training sessions, clients are made pre-informed by their vendors about the training to be offered and the exams to be administered after the completion of the training. Project manager of Vendor C expressed the matter and the mechanism employed to alleviate the problem as:

Trainees are getting informed about exams to be administered after the planned trainings. Each trainee's performance score will be sent to the client organization and it will be filed as part of his/her records. As a result, the trainees are actively participating in the trainings and we found it as a good knowledge transfer practice.

Likewise, the learning intent of vendors affects the successful transfer of knowledge during the conduct of an ISD project. If vendors' learning intent is low, clients' specific needs and requirements may inadequately be transferred to the vendors. 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.

Conversely, when vendors' learning intent is high, the clients' feedback can be appreciated and used for project-specific tasks by the vendors. 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 of the problems encountered during our project undertakings and tackle those problems systematically when encountered in other projects.

Hence, mutual learning intent is found to be an important facilitator of successful knowledge transfer between outsourcing partners. If one party is motivated to learn and the other lacked this motivation, knowledge transfer becomes inadequate which in turn impacts onshore ISDO success.

- IV. **Mutual Disseminative Capacity:** While an ISO project is undertaken, an outsourcing partner becomes a knowledge source and required to pass the required knowledge to the other. The client needs to have the ability to clearly identify and understand its needs and requirements and then precisely pass them to the vendor. The vendor in turn needs to have the capacity to articulate and deliver the technical knowledge related to the use and technical features of the new system to the clients. Such capacity of the knowledge source is known as disseminative capacity. It refers to the ability of the knowledge source to codify, articulate, and communicate the required knowledge to the recipient by using appropriate transfer mechanisms (Mu et al., 2010; Parent et al., 2007).

Disseminative capacity is a newly identified influencing factor of knowledge transfer that emerges from the analysis of our data. A low level of disseminative capacity of a client leads to difficulty in identifying and expressing needs, requirements, or even problems to the vendor which in turn affects project progress. The following citation from the project manager of Vendor D describes this issue:

The RFP document is not sufficient for the design and development of the new system. When we asked clients for their requirements, they tell us some but not all. They missed some important workflows or they considered it unnecessary but 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.

The project manager of Vendor D was asked about the solution to help alleviate the client's problem in providing the necessary knowledge and 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.

As the findings in Sub-section 3.2.3.2 indicated, instead of developing their own requirements, clients directly copy requirements from the Internet and put the same in their bid documents. This shows that clients have limited disseminative capacity, as well as a poor understanding of the value of accurate and complete knowledge while transferring it to the vendors. When clients were asked for further clarification of unclear requirements by the vendor during the start of the project, they faced difficulties to provide the expected explanations. In this regard, the Project Manager of Vendor B noted:

[...] When we started our work and asked clients for clarifications, they are not providing us the proper explanations about it.

On the other hand, clients with high disseminative capacity allow the vendor to obtain the necessary knowledge and reduces the time it spent on collecting detailed requirements and preparing requirements document. The following statement illustrates this point:

We client's project team gathers requirements from the business domain experts in our organization and prepares the requirements document. The vendor simply goes to system design and development. When the vendor accomplished about 70% of the project, a workshop will be organized for the demonstration of the developed system. Besides the client's project team members, top management and end-users are made to participate in the workshop. The vendor makes a presentation about the developed system. During this workshop, issues/requirements not seen by the technical committee of the client will be raised and made to be incorporated (Project Manager, Client W).

The findings in Sub-section 3.2.3.2 also showed that clients have inadequate knowledge about the newly developed information system and lack the confidence to accept the completed system and close the contract with the vendor. This can be linked to the vendors' lower disseminative capacity to properly identify the knowledge requirements of their clients and to effectively pass to them. Besides, the findings in Sub-section 3.2.3.2 indicated that most clients and vendors are heavily relying on written or codified knowledge and the mechanism that supports the transfer of this knowledge, i.e., officially written documents exchanges. Codified knowledge is not the only knowledge demanded in the outsourced information systems development project. There is a knowledge that can only be transferred through the direct interaction of outsourcing parties such as technical know-how and know-how regarding business processing. Disseminative capacity necessitates the utilization of appropriate transfer mechanisms by the knowledge source to

successfully transfer the different types of knowledge that are relevant to the recipient (Parent et al., 2007).

In conclusion, the exploratory study demonstrated that disseminative capacity is an important ability demanded by both clients and vendors to transfer each other's knowledge successfully. Thus, mutual disseminative capacity is one of the key facilitators of knowledge transfer in onshore ISDO relationships.

3.2.4. Implications of the Exploratory Study

The exploratory study was useful in understanding the ISO and knowledge transfer context in Ethiopia, the indicators of mutual onshore ISDO success from the client-vendor perspective (satisfaction with the developed system, meeting project schedules, achievement of project objectives, derived business values, and satisfaction with the outsourcing relationship), and the key factors influencing knowledge transfer and utilization in onshore ISDO success.

Generally, the lessons learned from the exploratory study had important implications for making revisions to the preliminary research model (see Figure 2.2). Hence, mutual absorptive capacity, mutual competence trust, and mutual learning intent were supported by enough data following the analysis of the entire data set of the exploratory study. On the other hand, the perceived value of knowledge, knowledge complexity, and knowledge tacitness were dropped from the preliminary conceptual model due to the lack of enough supporting data. Furthermore, the competence trust dimension is supported by the qualitative data as a factor affecting knowledge transfer in the ISO context of Ethiopia although the construct trust has an additional dimension, namely benevolence trust (McAllister, 1995). During the analysis of the qualitative data, mutual disseminative capacity also emerged as a new factor affecting knowledge transfer. Thus, it was made to be incorporated into the revised conceptual research model (see Figure 3.1).

Thus, besides the literature review and the findings of the exploratory study, this research is further guided and informed by the knowledge-based view and social exchange theory. Although KBV and SET were chosen from the review of related works for the purpose of the current research, earlier works used these theories with respect to their research context. In other words,

they lacked detailed explanations to provide a complete understanding of each theory. Therefore, the next section discusses the theoretical background of the study.

3.3. Theoretical Background

Besides the findings of the exploratory study, this study was further guided and informed by two theories: knowledge-based view and social exchange theory. The existing theories have limitation to explain and provide a detailed understanding of the dyadic level constructs of the research model including mutual disseminative capacity, mutual absorptive capacity, mutual competence trust, and mutual learning intent. Thus, the two theories employed can provide additional insights in designing the research model, understanding the constructs, and formulating the hypotheses. The next sub-sections discuss the theoretical lenses used in this study.

3.3.1. Knowledge-Based View (KBV)

The knowledge-based view of a firm is an extension of the resource-based view, which considers knowledge as the most important strategic resource for the firm (Hooff and Ridder, 2004; Grant, 1996). Knowledge is a key factor that has a major impact on productivity, innovation, and product development (Spender, 1996). Organizational knowledge, such as operational routines, skills, or know-how, is the most valuable resource (Grant, 1996; Kogut and Zandar, 1992). This knowledge held by the firm is embedded in multiple entities, such as the organizational culture, work routines, information systems, documents, and employees (Grant, 1996; Alavi and Leidner, 2001). In general, knowledge exists in two forms: explicit and tacit knowledge (Nonaka, 1994). Explicit knowledge can be codified and transmitted in a formal language (Nonaka & Takeuchi, 1995). Whereas, tacit knowledge is accumulated practical skills or experiences (Khamseh and Jolley, 2008), context-specific (Chen, 2010), and deeply rooted in individuals' cognitive processes and/or ingrained in the routine and non-routine processes of an organization's unique culture and values (Daft & Lengel, 1986; Khamseh and Jolley, 2008). The tacit knowledge type is difficult to codify, articulate, and transfer. Thus, KBV suggests that there exist a variety of mechanisms through which knowledge can be retained and transferred within a firm. The main mechanisms include face-to-face interactions, personnel movement, training, and observation (Chua and Pan, 2008; Argote, 2013).

According to KBV, performance differences come from the heterogeneous knowledge bases among firms and their ability to create, transfer, combine, and utilize knowledge (Grant, 1996; Spender, 1996). In other words, the more superior knowledge capabilities of a firm, the more sustainable competitive advantage it gained (Kogut & Zander, 1992). Due to the highly changing nature of the operating environment, a firm's competitive advantage can no longer be secured only by its internally created and possessed knowledge (Feller et al., 2009). In this scenario, firms need to acquire resources and capabilities held externally through knowledge transfer (Feller et al., 2009; Lee, 2001). Besides knowledge creation, knowledge transfer and knowledge utilization are the two central themes of the KBV perspective (Teo and Bhattacharjee, 2014; Spender, 1996). Hence, KBV suggests that knowledge resources can be created within and transferred across firms which leads to a combination of both internal and external resources to achieve a better result when these resources are effectively utilized.

According to KBV, absorptive capacity is one of the required organizational capabilities that enables an organization to acquire knowledge and skills from external sources, to generate value from the knowledge it received, and to improve its organizational performance (Grant, 1996). Hau and Evangelista (2007, p.1152) further argued that the ability of an organization to seek out, absorb, and transfer knowledge from a partner is very critical. There have been efforts by scholars to reconceptualize absorptive capacity from theoretical and definitional perspectives (Lane et al., 2006; Todorova and Durisin, 2007). Zahra and George (2002) identified four dimensions of absorptive capacity that constitute potential and realized absorptive capacity. According to them potential absorptive capacity includes a firm's capability to acquire and assimilate new externally generated knowledge. On the other hand, realized absorptive capacity reflects a firm's capacity to transform and exploit the existing and newly acquired and assimilated knowledge. However, Lane et al. (2006) argue that defining absorptive capacity based on the concepts of potential and realized absorptive capacity creates a bias towards the short-term benefits of the construct. According to them, absorptive capacity includes three components: recognizing and understanding externally held knowledge (through exploratory learning), assimilating new knowledge (through transformative learning), and utilizing assimilated valuable external knowledge (through exploitative learning). Todorova and Durisin (2007) also made theoretical arguments for their disagreement of the idea of potential and realized absorptive capacity constructs. Basing the work of Cohen and Levinthal (1990),

Todorova and Durisin (2007) expanded the dimensions of absorptive capacity to recognize the value, acquire, assimilate, transform, and exploit. Nevertheless, in relation to knowledge transfer, absorptive capacity is also treated as a single variable (Van Wijk et al., 2008; Chang et al., 2012). As to Chang et al. (2012), all components of absorptive capacity are necessary and together they influence the extent of knowledge received by the recipient.

Disseminative capacity is another requisite organizational capability to make internally created knowledge transferred effectively within or across collaborative organizations (Minbaeva and Michailova, 2004). According to KBV, due to the complexity and tacit nature of valuable knowledge, knowledge senders need to have a strong disseminative capacity to ensure successful transfer of knowledge to the recipients (Tang et al., 2010; Oppat, 2008). For example, if knowledge senders lack the ability to articulate, codify and communicate the required knowledge, then the transferred knowledge might be unclear to the recipient, misunderstood, misinterpreted, and distorted (Tang et al., 2010; Mu et al., 2010). Moreover, knowledge transfer is featured by different interpretations of the same idea and disruptions (Zellmer-Bruhn, 2003). Therefore, knowledge senders' disseminative capacity will minimize misunderstanding and duplication of the knowledge transfers, which in turn, facilitating the transfer of knowledge to the recipients (Tang et al., 2010). In short, KBV stresses that if a sender possesses disseminative capacity, knowledge can be successfully transferred to a receiver (Tang et al., 2010; Oppat, 2008).

Many definitions of disseminative capacity are given in literature. Minbaeva and Michailova (2004) define disseminative capacity as the ability and the willingness of organizational actors to transfer their knowledge where and when it is needed in their organization. In other work, dissemination capacity is defined as "the ability of knowledge holders to efficiently, effectively, and convincingly frame knowledge in a way that other people can understand accurately and put their learning into practice" Tang et al. (2010, p.1587). Parent et al. (2007, p.87) describe this capacity as 'the ability to contextualize, format, adapt, translate and diffuse knowledge through a social and/or technological network and to build commitment from stakeholders'. Schulze et al. (2014) also introduce the components of disseminative capacity: (1) attainment of expert knowledge, (2) assessing the recipient firm's knowledge base and its needs, (3) encoding knowledge.

In IS outsourcing context, information systems development is a complex and communication-intensive activity (Park et al., 2012). According to the KBV, two main types of knowledge, namely client's business knowledge and vendor's technical knowledge are necessary and need to be exchanged between the partners (Hamid and Salim, 2011). Furthermore, clients and vendors are both have roles in sending knowledge. This implies that knowledge transfer in ISO is characterized by mutual activities and interaction where knowledge is transferred from one partner to the other and vice versa. According to Cabrera (2003) partners engaged in knowledge transfer may face difficulties to transfer their specific knowledge to each other if they lack the competency, skills and language to do so. In their study, Parent et al. (2007) indicate that when social systems (e.g., organizations) are involved in solving complex problems they need to possess disseminative capacity and act collaboratively for knowledge transfer to succeed. According to them, partners with grater disseminative capacity will solve a particular problem through efficient and effective transfer of knowledge: (1) identification of the system's needs or the problem to be solved, (2) defining the type of knowledge to be transferred based on the identified problem, (3) employing appropriate transfer mechanisms to facilitate the transfer of identified knowledge. Hence, strong disseminative capacity of outsourcing partners is essential for effective knowledge transfer (Mu et al., 2010).

Furthermore, KBV denotes that inter-organizational relationship provides organizations with the opportunity for mutual learning (Connell and Voola, 2007; Nodari et al., 2013) which inspires new knowledge creation and innovation (Kogut & Zander, 1992; Tsai & Ghoshal, 1998). Besides the capability to use a newly acquired knowledge, partners need to have the intent or motivation to learn from each other (Hamel, 1991; Inkpen, 1998; Norman, 2002). Learning intent describes a partner's determination to learn certain knowledge and skills held by the other partner (Tsang, 2002); thus, it is a precondition of knowledge transfer (Hamel, 1991). Norman (2002, pp.181-182) also defines learning intent as "the desire of the partner to gain access to and learn from the focal firm". To summarize, successful inter-organizational relationships urge the collaborating parties to see mutual benefit and value by identifying their mutual learning intent (Child et al., 2005).

From the KBV, literature review, and the exploratory study, absorptive capacity, disseminative capacity, learning intent, knowledge transfer, and knowledge utilization constructs are identified

for constructing the current study's research model. In addition, this theoretical perspective provides important insights regarding the impact of knowledge transfer and utilization on ISO success. On the other hand, KBV has a limitation to understand the social issues that influence knowledge transfer in ISO context (Juntiwasarakij and Trauth, 2009) and it lacks focus on the behavioral outcomes of ISO relationship. Thus, integrating insights from social exchange theory into KBV is essential to identify the key influencing factors of knowledge transfer and utilization in onshore ISO relationship and to examine the effect of knowledge transfer and utilization on ISO success.

3.3.2 Social Exchange Theory (SET)

Social exchange theory is one of the most prominent theories to understand the social behavior of humans in an economic context. Growing from the intersection of economics, sociology, and social psychology, social exchange theory was originally introduced by Homans (1958) and advanced by many scholars, for example, Blau (1964), Cook (1977), and Emerson, (1962). These theorists view people's social behavior in terms of exchanges of resources. SET focuses on dyadic interpersonal exchange relations involving the exchange of resources for the mutual benefit of the actors and minimize costs (Gottschalk and Solli-Sæther, 2006; Leimeister, 2010).

According to Gottschalk and Solli-Sæther (2006) the need for social exchange is arising from the scarcity of resources which prompts exchange parties to engage in each other to obtain valuable resources. SET essentially discusses mutual benefits over activities which are done jointly by parties involved in the exchange relationship (Lawler, 2001; Gupta and Sushil, 2014). Social exchange is defined as "voluntary actions of individuals that are motivated by return they are expected to bring and typically in fact bring from others" (Gottschalk and Solli-Sæther, 2006, p.117). Social exchange involves a series of interactions that are usually seen as interdependent and contingent on the rewarding reactions of another person (Blau, 1964), i.e., it is an "ongoing reciprocal process". In social exchanges, individuals help others because of their expectations of some future returns through social reciprocity (Liu et al., 2011).

As the purpose of social exchange is to maximize benefits and minimize costs (Leimeister, 2010), according SET, over time, each party engaged in the exchange relationship compares the potential benefits and risks associated with the social relationships (Gottschalk and Solli-Sæther,

2006; Leimeister, 2010). Benefits/outcomes can be social and/or economical. When the risks outweigh the rewards, the partner will terminate or abandon that relationship. Thus, satisfaction with the exchange relationship determines the continuation of the relationship (Gottschalk and Solli-Sæther, 2006). Hence, SET builds on essential social norms' constructs, for example, trust. Trust is one of the relational exchange variables that lead to a successful exchange relationship (Lambe et al., 2001). Blau (1964) argues that trust is vital for the social exchange process. It assumes that both parties involved in the exchange relationship invest without any guarantee that such an investment will produce a future return so that the risk of this investment requires trust (Blau, 1964). Trust is defined as the "expectation that an actor (1) can be relied on to fulfill obligations ..., (2) will behave in a predictable manner, and (3) will act and negotiate fairly when the possibility for opportunism is present" (Zaheer et al., 1998, p.143). Trust helps actors to create and maintain exchange relationships. Trust-based inter-organizational exchanges are characterized by mutuality and mutual trust enhances common benefits from the exchange relationship (Aulakh et al., 1996; Sarkar et al., 2001).

In summary, there are four foundational premises of social exchange theory (Lambe et al., 2001, p.6):

(1) exchange interactions result in economic and/or social outcomes, (2) these outcomes are compared over time to other exchange alternatives to determine dependence on the exchange relationship, (3) positive outcomes over time increase firms' trust of their trading partner(s) , and (4) positive exchange interactions over time produce relational exchange norms that govern the exchange relationship.

While the origin of SET is at the individual level, social exchange theory has been used to explain inter-organizational behavior during economic undertakings (Das and Teng, 2002; Liu et al., 2011). In the context of IS outsourcing research, social exchange theory has served as an underlying theoretical model for examining outsourcing relationships and client-vendor exchanges (Lee and Kim 1999; Zainuddin and Bassellier, 2012). According to SET, the resource exchanged would be knowledge and outsourced IS project is viewed as an economic undertaking. Knowledge transfer by its nature is an activity of mutual exchange (Liu et al., 2011). According to SET, actors exchange knowledge due to the perceived benefits (Davenport and Prusak, 1998). Therefore, SET can provide the opportunity to understand and explain the knowledge transfer behaviors of clients and vendor organizations in ISO relationship.

In the outsourcing arrangements, knowledge transfer will occur when the outsourcing partners believe that such transfer will result in creating value for each other (Nahapiet and Ghoshal, 1998). Each partner brings unique resources (that the other actor lacks) and is involved in the exchanges for the betterment of both actors (Lertpittayapoom et al., 2007). It is often argued that clients bring in business knowledge and vendors bring in technical knowledge (Goles, 2001). Besides the social exchange of knowledge, clients and vendors also need to act on each other's knowledge, combine it during the development of the outsourced project (Faraj and Sproull, 2000) or implementation of the system (Ko, 2014; Ko et al., 2005).

While some knowledge transfer can occur due to formal contractual requirements (Teo and Bhattacharjee, 2014), outsourcing partners need to pay heed to unwritten contracts to supplement the more formal contracts to achieve a successful knowledge exchange in the outsourcing relationship. According to Goles (2001) trust is one of the intangible factors that could not be easily captured in the formal contract. Trust is often embedded in social relation (Young-Ybarra and Wiersema, 1999) which play a key role in a social exchange relationship between IS outsourcing partners (Park and Im, 2007).

Overall, the outcome/success of the exchange relationships is determined based on partners' satisfaction with the ISO relationships (Goo et al., 2007; Gupta and Sushil, 2014). According to social exchange theory, satisfaction plays a key role in exchange relationships. Satisfaction has a product and non-product attributes, for example, output quality (Goo et al., 2007), maintaining and expanding the relationship, and overall approval of the relationship (Gottschalk and Solli-Sæther, 2006). Therefore, the construct trust is taken from SET to develop this study's research model. Besides, SET provides a deeper understanding of the independent construct ISO success and indicator of mutual ISO success, relationship satisfaction.

3.3.3. Summary of Theoretical Background

Due to the lack of theoretical models involving the constructs mutual trust, mutual learning intent, and mutual absorptive capacity, the exploratory study allowed the researcher to understand these concepts and obtain additional insights to modify the initial conceptual framework.

Then, in order to have a detailed understanding of the seven constructs of the proposed research model (see Figure 3.1), KBV and SET were employed (see Table 3.3 for summary). KBV helps to identify and understand the required capabilities needed to be possessed by outsourcing partners for successful transfer and utilization of knowledge, which in turn leads to better ISO outcome.

Table 3. 3 Summary of theories employed and their relevance for the Study

Theory	Key proposition	Relevance to Current Study
KBV	<ul style="list-style-type: none"> • Knowledge is a primary resource of a firm that creates superior performance and sustainable competitive advantages (Grant 1996; Hooff and Ridder, 2004). • Performance differences come from the heterogeneous knowledge bases among firms and their ability to create, combine, diffuse, and utilize knowledge(Grant, 1996; Spender, 1996). 	<ul style="list-style-type: none"> • Outsourcing relationship is a way gaining access to external knowledge critical to the firm's competitive advantage and performance improvement. • In inter-organizational knowledge transfer, partners need to possess the requisite capabilities namely disseminative capacity and absorptive capacity for better outcome. • Inter-organizational knowledge transfer provides organizations with the opportunity for mutual learning (Connell and Voola, 2007; Nodari et al.,2013). Thus, outsourcing partners need to have the intent or motivation to learn from each other (Hamel, 1991; Inkpen,1998; Norman, 2002).
SET	<ul style="list-style-type: none"> • SET views dyadic exchange relations as voluntary transactions involving an exchange of resources between partners for mutual benefit and minimizing costs (Blau, 1964; Cook,1977). 	<ul style="list-style-type: none"> • In the outsourcing relationship, the resource exchanged would be knowledge and outsourced IS project is viewed as an economic undertaking. • Trust, knowledge transfer, and Satisfaction are the core elements in SET (Blau, 1964; Qi and Chau, 2015).

As KBV has a limitation in understanding the social issues that influence knowledge transfer in the IS outsourcing relationship, a second theory, social exchange theory, is employed to examine the social issues that influence knowledge transfer, as well as the behavioral outcomes of ISO relationship. According to Juntiwasarakij and Trauth (2009), SET has a unique feature and it can capture all potential factors and perspectives (e.g., social and economic) which are necessary for studying knowledge transfer in IS outsourcing setting. Thus, the use of KBV and SET to

investigate the knowledge-related factors that explain onshore ISDO success is theoretically sound. The following sections present the hypotheses formulated.

3.4. Research Model and Hypothesis Development

As highlighted in Section 3.2.2.2 and Section 3.2.4, drawing from literature, the key common knowledge-related factors including mutual absorptive capacity, mutual trust, and mutual learning intent were proposed to have an impact on the successful transfer of knowledge in a dyadic relationship. The findings of the exploratory study supported that mutual absorptive capacity and mutual learning intent have a significant impact on knowledge transfer (see Section 3.2.3.4). Related to mutual trust, only the competence trust dimension of trust is supported by the qualitative data. As a result, mutual competence trust as a knowledge transfer influencing in the ISO context of Ethiopia were identified from the study(see Figure 3.1).

Furthermore, additional factor, i.e., mutual disseminative capacity, was resulting from the analysis of the qualitative data as a factor impacting knowledge transfer between outsourcing partners. Therefore, this new factor was added in the revised conceptual research model as depicted in Figure 3.1. On the other hand, due to the lack of supporting data, three factors that were included in the preliminary conceptual model (perceived value of knowledge, knowledge complexity, and knowledge tacitness) were dropped in the revised conceptual research model. Lastly, the exploratory study's findings also helped to understand mutual onshore ISDO success and identify its indicators. These include satisfaction with the developed system, meeting project schedules, achievement of project objectives, derived business values, and satisfaction with the outsourcing relationship.

In general, given the exploratory study, as well as the KBV and SET theories mentioned above, a research model (see Figure 3.1) is developed to explore the effect of knowledge-related factors on onshore ISDO success. These are mutual competence trust, mutual disseminative capacity, and mutual absorptive capacity, and mutual learning intent. More specifically, according to the exploratory study and the SET theory, mutual competence trust influences knowledge transfer. On the other hand, mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent affect knowledge transfer according to the knowledge-based view and exploratory study. Besides, knowledge transfer (based on the KBV), and mutual absorptive capacity (based on KBV and exploratory study) affect knowledge utilization and ISDO success. The KBV and

SET also show that knowledge transfer affects ISDO success. Furthermore, the relationships between mutual absorptive capacity and ISO success, mutual disseminative capacity and mutual absorptive capacity, mutual learning intent and mutual absorptive capacity, and mutual competence trust and mutual absorptive capacity are proposed in the research model.

Therefore, this section provides the conceptual model along with the formulated hypotheses that depict the inter-relationships among constructs of the research model, shown in Figure 3.1. Table 3.4 summarizes the definition of each construct of the research model.

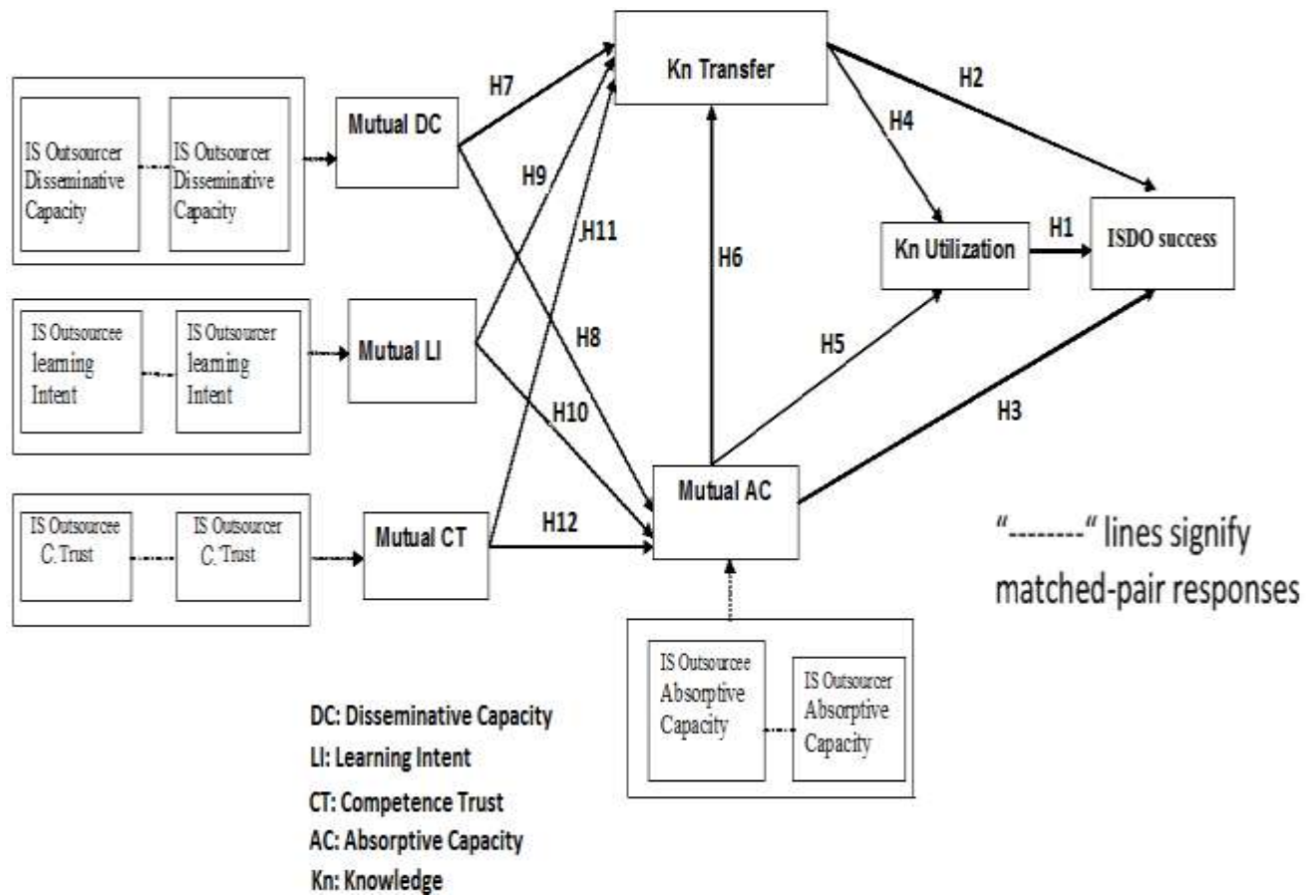


Figure 3. 1 **Research Model and Hypotheses**

Table 3. 4 Conceptual Definitions of the Constructs

Construct	Definition	Related Sources
ISDO Success	The overall mutual organizational benefits obtained from ISDO by outsourcing partners.	Lee (2001) ; Qi and Chau (2012) and exploratory study
Knowledge Transfer	A bi-directional flow of knowledge between a client and a vendor during the course of an outsourced information system development project.	Ko et al. (2005); Teo and Bhattacharjee (2014) and exploratory study
Knowledge Utilization	The extent to which outsourcing partners use transferred knowledge in order to accomplish outsourcing tasks and improve their internal business activities.	Teo and Bhattacharjee (2014)
Disseminative Capacity	The ability of a knowledge source to codify, articulate, and communicate the required knowledge to a recipient by applying appropriate transfer mechanisms.	Mu et al. (2010); Oppat (2008) and exploratory study
Absorptive Capacity	The ability of a knowledge recipient to recognize the value of new knowledge, assimilate, transform and exploit the knowledge to solve the problem or to business ends.	Ko et al. (2005); Xu and Ma (2008); Hamid and Salim (2011).
Learning Intent	The extent of desire and will of an outsourcing partner to learn from the other during an outsourcing relationship.	Simonin (2004); Khamseh and Jolly (2008)
Competence Trust	The belief about outsourcing partner's expertise to accomplish outsourcing tasks and reliability to carry out its promises.	McAllister, (1995); Krishnan et al. (2006) exploratory study

Basing the exploratory study and prior empirical and conceptual studies, the discussion of each of the proposed hypotheses is given in the following sections.

3.4.1. Knowledge Utilization and ISDO Success

ISDO success, the dependent variable of this research, is conceptualized as the overall mutual organizational benefits obtained from ISO by outsourcing partners (Lee, 2001; Qi and Chau, 2012) (see Table 3.4). These include satisfaction with the developed system, delivery of the project within the agreed time in the contract, the achievement of project objectives, derived values from the outsourcing relationship, relationship satisfaction, and overall satisfaction. Relationship satisfaction refers to the satisfaction of outsourcing partners with their interactions and the indication of the interest of the partners to work together in future projects (Zainuddin et al., 2012). Knowledge utilization refers to the use of transferred knowledge by outsourcing partners in order to accomplish outsourcing tasks and improve their internal business activities

(Teo and Bhattacharjee, 2014) (see Table 3.4). Greater knowledge utilization improves outsourced IS development performance of client firms by increasing efficiency and reducing costs of IT operations (Teo and Bhattacharjee, 2014) and facilitates partners' decision making (Park and Lee, 2014).

Moreover, Teo and Bhattacharjee (2014) suggest that greater business value will be generated when knowledge is effectively utilized. In another case study by Rottman (2008), knowledge utilization enhances the quality of deliverables produced which in turn improves outsourcing performance. When knowledge is effectively utilized clients can apply and maintain the newly implemented IS (Wang and Gan, 2010). Similarly, knowledge utilization can help the vendor to gain a reputation and satisfy its client by leveraging the client-specific knowledge in the outsourced IS development projects (Hamid and Salim, 2010). Hence, knowledge utilization will increase the chance of ISDO success (Wang and Gan, 2010; Liao et al., 2009). Taking the above into consideration, the following hypothesis is formulated:

H1: Knowledge utilization is positively associated with onshore ISDO success.

3.4.2. Knowledge Transfer and ISDO Success

Both KBV and SET stress the criticality of the resource knowledge and assume that its effective transfer between outsourcing partners can lead to improved mutual ISDO performance (Blumenberg et al., 2009; Qi and Chau, 2015). Information systems research has shown that knowledge transfer is one of the main factors that impact ISO success (e.g., Lacity et al., 2017; Sudhakar, 2013). Although prior studies examined the impact of knowledge transfer on ISO success, they took either a client or a vendor perspective (Teo and Bhattacharjee, 2014; Williams, 2011), but not both.

The transfer of the requisite knowledge between outsourcing partners can lead to a better understanding of client's requirements and ensure clarity of expectations, which, in turn, improves outsourcing performance (Gopal and Gosain, 2010). Knowledge transfer in ISO relationships can increase the level of shared knowledge (Blumberg et al., 2009), improve the quality of deliverables produced, reduce development costs, and create a strong relationship between partners (Rottman, 2008). Park and Lee (2014) argue that knowledge transfer can improve information systems development performance due to improved decision making and coordination. Hence, based on the above arguments, the following hypothesis is proposed:

H2: Knowledge transfer has a positive effect on onshore ISDO success.

3.4.3. Mutual Absorptive Capacity and ISDO Success

Prior studies show that clients' absorptive capacity is one of the critical success factors of ISO success (e.g., Kim et al., 2010; Lee, 2001). However, previous studies were mostly focused on the absorptive capacity of the client in the client-vendor dyads, but not mutual absorptive capacity. In this study, mutual absorptive capacity is defined as the extent to which a client-vendor dyad's high level of absorptive capacity for each other's new knowledge is in agreement.

According to Kim et al. (2010), organizations with higher levels of absorptive capacity are likely to be more effective in exploiting opportunities present in their environment. Outsourcing partners with a high level of absorptive capacity to each other's new knowledge can better identify and understand the new external valuable knowledge, integrate the different kinds of knowledge in a flexible way, and utilize the knowledge to accomplish project tasks and activities (Yoo et al., 2011).

Furthermore, partners with the requisite absorptive capacity are more likely to improve their business performances by integrating the new relevant knowledge received from each other with their existing routines and practices (Roberts et al., 2012; Pavlou & El Sawy, 2006). Only when the diverse knowledge and expertise of outsourcing partners are recognized and brought to bear on the ISD processes, the resulting system will adequately address the client's needs and expectations and satisfy both parties (Patnayakuni et al., 2007; Tiwana, 2004). Thus, the following is hypothesized:

H3: Mutual absorptive capacity is positively related to onshore ISDO success.

3.4.4. Knowledge Transfer and Knowledge Utilization

Although knowledge transfer is an important step in the knowledge management process, its mere transfer does not guarantee utilization of the transferred knowledge by the involved actors (Ouakouak and Ouedraogo, 2018; Teo and Bhattacharjee, 2014). The transferred knowledge becomes useful and addresses a given problem only if the recipient utilizes it (Ouakouak and Ouedraogo, 2018).

Outsourced information systems development project is known to be a knowledge-rich activity (Subasingha et al., 2012; Gopal and Gosain, 2010). It demands the transfer and blending of the client's business knowledge with the vendor's technical knowledge to ensure outsourcing success

(Deng and Mao, 2012; Hamid and Salim, 2011). When essential knowledge is transferred between clients and vendors, they can better practice their outsourcing activities and develop a long-term outsourcing relationship (Al-Azad and Ahn, 2014; Lee et al., 2008). Successful transfer of knowledge between outsourcing partners can increase their knowledge base and develop operational capabilities and new competences (Teo and Bhattacharjee, 2014; Su and Mao, 2013). According to the KBV, therefore, inter-organizational knowledge transfer will facilitate the effective utilization of knowledge for ensuring the chance of ISDO success (Wang and Gan, 2010; Liao et al., 2009). Thus, it is hypothesized that:

H4: Knowledge transfer has a positive effect on knowledge utilization in onshore ISDO relationship.

3.4.5. Mutual Absorptive Capacity and Knowledge Utilization

According to the KBV, successful utilization of knowledge necessitates the recipient's capacity to utilize the knowledge that is obtained or synthesized from different sources (Grant, 1996). According to Holsapple (2003), knowledge can create business value when it is properly integrated and utilized for specific activities, tasks, and purposes. Nodari et al. (2013) indicated that organizations with a higher level of absorptive capacity will tend to have a greater ability to use the knowledge collected from an external source. The vendor's absorptive capacity facilitates the utilization of the new knowledge for outsourcing tasks (such as solving client's business problems) and for exploring further business opportunities in the market (Cohen and Levinthal, 1990; Pavlou & El Sawy, 2006). A vendor with a higher level of absorptive capacity can utilize the newly valued and assimilated knowledge by combining and embodying it both in the conceptual design, functionality, and features of the system and in intermediate design artifacts such as requirements specifications, models, software architectures, etc. (Robillard, 1999; Walz et al., 1993). Absorptive capacity of a vendor is also enable the vendor to adapt to new demands from their clients (Li et al., 2014), which in turn leads to higher outsourcing outcomes.

In the same way, the higher clients' absorptive capacity leads to a more effective application of the new information system (Lyengar et al., 2015). Moreover, clients with higher absorptive capacity will tend to exploit the new external technical knowledge received from the vendor to promote new ways of doing things and enhance their IS staff expertise and performance (Yakhlef, 2009). The findings of the exploratory study also shows that absorptive capacity of the

client enables it to actively participate in the technical test of a system developed by the vendor and produce valuable test results which then make the system testing detailed and successful. Besides, the findings indicated that when the absorptive capacity of the client is low, it might not successfully utilize the knowledge transferred from the vendor and sustain the ongoing operations of the newly implemented system.

Generally, only when the diverse knowledge and expertise of outsourcing partners are brought to bear on the ISD processes, the resulting system will adequately address the client's needs as expected and expectations (Patnayakuni et al., 2007; Tiwana, 2004). Therefore, it can be argued that the mutual absorptive capacity of partners is essential for the successful utilization of the transferred knowledge (Easterby-Smith et al., 2008). Based on the above arguments, the following hypothesis is proposed:

H5: Mutual absorptive capacity is positively related to knowledge utilization in onshore ISDO relationship.

3.4.6. Mutual Absorptive Capacity and Knowledge Transfer

Organizational ability to acquire and utilize valuable knowledge originated from external sources is one of the determinants of effective transfer of knowledge (Van Wijk et al., 2008; Lee, 2001). Cohen and Levinthal (1990, p.128) define absorptive capacity as "the ability of a firm to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends". Many of ISO literature adopts the definition of absorptive capacity as a recipient's ability to recognize the value of new external knowledge, assimilate, transform, and exploit this knowledge (Ko et al., 2005; Xu and Ma, 2008; Hamid and Salim, 2011) (see Table 3.4). In keeping with the most widely cited work of Cohen and Levinthal (1990) and the works of Van Wijk et al. (2008) and Chang et al. (2012), in this paper absorptive capacity is conceptualized as a single construct.

Empirical studies have shown that a client's absorptive capacity improves knowledge transfer from consultants to clients in the implementation of complex information systems (Ko et al., 2005; Xu and Ma, 2008). Additionally, the case study of Li et al. (2014) indicates vendors with high absorptive capacity can assimilate, internalize, and apply the new knowledge acquired from their clients to outsourcing tasks. However, earlier studies conceptualize and measure absorptive capacity as a single-respondent view, i.e., focusing on either the absorptive capacity of the client

or the vendor (e.g. Lee, 2001; Kim et al., 2010). One limitation of the single-respondent view is that it considers only one party's absorptive capacity is sufficient to a successful transfer of knowledge. However, effective knowledge transfer should consider the absorptive capacity of both clients and vendors. During ISD project undertakings, knowledge transfers in both directions and an outsourcing partner plays a knowledge source and a knowledge receiver role. When the client transfers its knowledge, the vendor becomes a recipient and vice versa. Though a single-respondent view of absorptive capacity is an important predictor of knowledge transfer, it is unclear whether a dual-respondent view of absorptive capacity will have a similar effect.

The dual-respondent view differs from a single-respondent view because it involves both participants who may or may not display the same level and agreement of absorptive capacity about each other's new external knowledge. In an inter-organizational setting, a vendor may have the ability to quickly recognize the value of new external knowledge, absorb, and effectively assimilate and utilize the client's knowledge but the reverse may not be true. In a bi-directional knowledge transfer, Easterby-Smith et al. (2008) suggest that successful transfer of knowledge demands the absorptive capacity of both the source and the recipient. Hence, understanding mutual absorptive capacity is important in determining whether mutual absorptive capacity influences knowledge transfer, especially in a context where the dependency on another is needed to acquire knowledge and make project progress. Mutual absorptive capacity, as defined earlier, is the extent to which a client-vendor dyad's high level of absorptive capacity for each other's new knowledge is in agreement.

To successfully build a system, outsourcing partners need to interact and cooperate (Ko, 2014; Pee et al., 2010). Their interaction and cooperation are highly required for exchanging the necessary business and technical knowledge. Such repeated interactions allow partners to understand and predict each other's behavior concerning the ability to absorb the newly transferred knowledge.

Mutual absorptive capacity can facilitate the successful transfer of new relevant external knowledge between outsourcing partners in several ways. A vendor with a high level of absorptive capacity can quickly and effectively identify, absorb, and understand the client's business domain knowledge, business requirements, process knowledge, and workflows (Williams, 2011). On the other hand, the findings of the exploratory study shows that a vendor's

low level of absorptive capacity creates difficulties on the vendor to properly understand the specific needs and requirements of a client, which leads to unsatisfactory technical solution.

Similarly, higher absorptive capacity enables a client to effectively acquire and understand the new valuable technical knowledge of the vendor related to the use and technical possibilities of the new system (Ko et al., 2005; Rus and Lindvall, 2002). Therefore, the absorptive capacity of outsourcing partners can increase the volume of knowledge transferred to each other (Roberts et al., 2012; Kim et al., 2010). Thus, the following hypothesis is formulated:

H6: Mutual absorptive capacity is positively related to knowledge transfer in onshore ISDO relationship.

3.4.7. Mutual Disseminative Capacity and Knowledge Transfer

In the exploratory stud, disseminative capacity is identified as another important determinant of knowledge transfer in onshore ISDO context of Ethiopia. Although the relationship between the disseminative capacity of knowledge senders and knowledge transfer has been emphasized in non-ISO research (e.g., Minbaeva, 2007; Mu et al., 2010; Schulze et al., 2014), many existing studies are of a conceptual nature and lack empirical support (Oppat, 2008; Schulze et al., 2014). Even empirical studies have limitations. First, the definition and measure of the concept of disseminative capacity differ from one study to another (Tang et al., 2010; Minbaeva, 2007). Second, the important role of senders disseminative capacity in the inter-firm knowledge-transfer (a few exceptions, Oppat, 2008) has received less attention, mostly are in intra-organizational settings (e.g., Minbaeva and Michailova, 2004; Minbaeva, 2007; Mu et al., 2010; Tang et al., 2010).

In ISO literature, the effect of knowledge senders' disseminative capacity on knowledge transfer is under-investigated. A few studies attempted to examine the indirect effect of the encoding competence of a knowledge source on knowledge transfer success (e.g., Ko et al., 2005; Xu and Ma, 2008). In this study, disseminative capacity refers to a knowledge source's ability to codify, articulate, and communicate the necessary knowledge to the recipient by applying appropriate transfer mechanisms (Mu et al., 2010; Oppat, 2008) (see Table 3.4). Furthermore, disseminative capacity is conceptualized as a single construct with respect to knowledge transfer and is seen as a dyadic level construct.

Knowledge transfer demands a collaborative effort of parties involved in the transfer activities (Park et al., 2012; Oppat, 2008; Minbaeva and Michailova, 2004). Active interaction and cooperation of outsourcing partners are important during the outsourced information systems development project (Ko, 2014; Pee et al., 2010). Partners repeated interactions allow them to understand and predict each other's behavior regarding their disseminative capacity for the knowledge to be transferred.

The findings of the exploratory study indicated that clients need to be capable of articulating their needs and expectations and effectively delivering these needs and expectations to the vendors during outsourced information systems development activities. Similarly, the ability of vendors to effectively codify, articulate, and pass their technical knowledge related to ISD process knowledge, as well as the use and technical features of the new system to their clients is important. In practice, a vendor may have the capacity to transfer its knowledge in a way that the client can comprehend it; but the reverse may not be true. Thus, in this study, mutual disseminative capacity refers to the extent to which a client-vendor dyad's high level of disseminative capacity to transfer the required knowledge for each other is in agreement.

When outsourcing partners show a high level of disseminative capacity for their knowledge to be transferred, they can be in a better position to assess each other's knowledge base and identify the relevant knowledge to be transferred (Schulze et al., 2014; von Krogh et al., 2000) and apply suitable transfer mechanisms (Oppat, 2008). Furthermore, the strong disseminative capacity of partners can help the relevant knowledge to be transferred on time and utilized efficiently by avoiding duplication of knowledge transfer and minimizing misunderstanding (Nidhra et al., 2013; park et al., 2012; Tang et al., 2010). Conversely, when outsourcing partners lack sufficient ability to transfer the relevant knowledge to each other, they might not be able to fully understand, completely articulate, and codify it for the intended transfer (Tang et al., 2010; Minbaeva and Michailova, 2004). Mu et al. (2010) also suggest that knowledge sources' interpretation and the way they communicate their knowledge has a significant impact on knowledge transfer success.

Thus, the successful transfer of knowledge in onshore ISDO relationship needs the mutual disseminative capacity of both the vendor and the client. However, there are no empirical studies (to the best of our knowledge) on the impact of mutual disseminative capacity on knowledge transfer in the inter-organizational context more specifically in information systems outsourcing.

Accordingly, it is hypothesized that knowledge transfer may be influenced by mutual disseminative capacity:

H7: Mutual disseminative capacity positively impacts knowledge transfer in onshore ISDO relationship.

3.4.8. Mutual Disseminative Capacity and Mutual Absorptive Capacity

The disseminative capacity of knowledge senders has also an effect on the absorptive capacity of knowledge recipients. Such capacity will create opportunities for cooperation and mutual understanding, which will increase partners' motivation to acquire and create new knowledge (Gupta & Govindarajan, 2000; Kogut & Zander, 1992).

The higher the ability of the knowledge source to effectively articulate and communicate its knowledge, the more easy the knowledge is to be received by the recipient (Mu et al., 2010). Conversely, knowledge holders lacking the ability to frame their knowledge in a way that the recipients can easily understand can create difficulties for knowledge recipients to effectively absorb and assimilate the transferred knowledge (Tang et al., 2010). As a result, the effect of mutual disseminative capacity on knowledge transfer and mutual absorptive capacity demands further examination and empirical test. Hence, the following hypothesis is formulated:

H8: Mutual disseminative capacity is positively related to mutual absorptive capacity in onshore ISDO relationship.

3.4.9. Mutual Learning Intent and Knowledge Transfer

Learning is a key indicator of gaining knowledge (Lertpittayapoom et al., 2007). Kim (1993) describes learning as the acquisition of skill or know-how for taking some action. In order to acquire knowledge from external sources and to capitalize on the transferred knowledge, the recipient needs to have the intent to learn (Hamel, 1991). According to Mowery et al. (1996), learning intent refers to the motivation or intention that a potential recipient has to learn. In the current research, learning intent refers to the extent of desire and will of an outsourcing partner to learn from the other during the outsourcing relationship (Khamseh and Jolly, 2008) (see Table 3.4).

Empirical studies on knowledge transfer show that a higher level of recipients' learning intent has a positive impact on knowledge transfer (e.g., Pérez-Nordtvedt et al., 2008; Khamseh and

Jolly, 2008). In addition, Pérez-Nordtvedt et al. (2008) and Hau and Evangelista (2007) indicate that knowledge can be transferred faster when partners have high motivation to acquire knowledge from each other. Nevertheless, these studies have largely focused on the learning intent of recipients from strategic alliances and international joint ventures perspectives. Although the importance of learning has been suggested in ISO context (e.g., Teo and Bhattacharjee, 2014; Su and Mao, 2013), the association between learning intent and knowledge transfer success has been given less attention typical empirical study by Deng and Mao (2012) showed that learning from the client and learning about the client promote knowledge transfer to vendors from their client significantly.

There exists knowledge asymmetry in ISO relationship (Bettis et al., 1992). As a result, the accomplishment of outsourcing tasks demands the client's and vendor's collaboration and exchange of the required knowledge (Lertpittayapoom et al., 2007). According to Zhao et al. (2004), knowledge transfer between two actors is a blend of teaching (source) and learning (recipient). While doing outsourcing tasks and activities, vendor and client shift their role from that of a teacher to that of a learner. Thus, during their repeated interactions, outsourcing partners can be in a position to understand and predict each other's behavior with respect to learning intent.

In order to develop an information system successfully, vendors are supposed to learn more about the client's business, specific needs, and requirements (Su and Mao, 2013; Deng and Mao, 2012). On the other hand, clients need to learn about the new system's functionalities and use (Deng and Mao, 2012; Lertpittayapoom et al., 2007). In sum, constructing a system involves learning different views and knowledge of outsourcing partners through an ongoing process of communication and negotiation (Pee et al., 2010). However, outsourcing partners with low learning intent might not succeed in acquiring the necessary knowledge through learning (Hamel, 1991).

According to the findings of the exploratory study, effective transfer of knowledge demands mutual learning intent. When a client lacks the interest to learn from a vendor, its participation in the ISDO process and activities is reduced. Such lack of motivation to learn will make the transfer of the requisite knowledge to the client ineffective. Similarly, the learning intent of the vendor affects the successful transfer of knowledge. When the vendors' learning intent is low, it

can lead to an inadequate transfer of client-specific business knowledge to the vendor. On the other hand, when the vendor's learning intent is high, it can appreciate the client's feedback and use it for project-specific tasks. As a result, it can be argued that without mutual learning intent, the outsourcing partners are less likely to get involved actively in the knowledge transfer process and less likely to take actions to the transferred knowledge. In this study, mutual learning intent is defined as the extent to which a client-vendor dyad's high level of learning intent to acquire knowledge from each other is in agreement.

Therefore, it is reasonable to argue that learning intent is important for both parties in the outsourcing relationship to ensure the successful transfer of knowledge. Hence, mutual learning intent is important between the outsourcing partners for the successful transfer of knowledge. Thus, the following is hypothesized:

H9: Mutual learning intent is positively related to knowledge transfer in onshore ISDO relationship.

3.4.10. Mutual Learning Intent and Mutual Absorptive Capacity

In outsourcing engagements, partners with high learning intent are encouraged to exert more effort and allocate time and resources for learning (Hamel, 1991; Hau and Evangelista, 2007). According to Hau and Evangelista (2007), outsourcing partners attentively observing each other's behavior to know what they are doing and how things are handled by them when they have learning intent. All these activities of partners would help them to acquire the required knowledge from each other (Ko et al., 2005; Khamseh and Jolly, 2008).

Moreover, Pérez-Nordtvedt et al. (2008) argue that the higher the recipient's organization motivation to acquire knowledge from an external source, the better it will be prepared psychologically to grasp the knowledge that is being transferred. Scholars also suggest that the recipient's learning intent leads to better understanding, quicker absorption, and better utilization of the newly transferred knowledge (Pérez-Nordtvedt et al., 2008; Sichinsambwe, 2011). As a result, it can be argued that mutual learning intent can increase the absorptive capacity of outsourcing partners when each partner plays the role of the knowledge recipient. Thus, it is hypothesized that:

H10: Mutual learning intent is positively related to mutual absorptive capacity in onshore ISDO relationship.

3.4.11. Mutual Competence Trust and Knowledge Transfer

Trust is one of the key factors that facilitate knowledge transfer between outsourcing partners (Ko, 2014). Due to the complex nature of trust, prior research has given diverse interpretations of trust. According to McAllister (1995), there are two key dimensions of trust: 1) affect-based, or benevolence trust, and (2) cognitive-based, or competence trust. Affect-based is relationship-oriented (Rivière and Tuggle, 2007) and it is largely based on “emotional” bonds between individuals (Chowdhury, 2005). This dimension of trust is the beliefs about reciprocated care and concern (Krishnan et al., 2006; McAllister, 1995). In contrast to affect-based, cognitive-based trust is the belief about exchanging partner’s competence and reliability (McAllister, 1995). It is mainly task-oriented (Rivière and Tuggle, 2007).

However, based on the insight obtained from the exploratory study (see Section 3.2.4), we posit that competence trust in ISO context of Ethiopia is likely an important determinant of knowledge transfer. Hence, competence trust is conceptualized as the belief about outsourcing partner’s expertise to accomplish given outsourcing tasks and reliability to carry out its promises (McAllister, 1995). Besides the complexity of trust, the literature is ambiguous about the multilevel nature of trust (Zaheer et al., 1998). In the buyer-supplier relationships, Zaheer et al. empirically found that the effects of trust in the inter-organizational context are distinct from the individual level of analysis. Thus, this study focuses on the inter-organizational perspective of trust.

Empirical studies in ISO settings have shown a significant positive association between trust and knowledge transfer (Ko, 2014; Park et al., 2014). A case study conducted by Rottman (2008) show that trust facilitates knowledge transfer in an offshoring arrangement by increasing partners' willingness to transfer knowledge and collaborate. Clients and vendors rely on each other knowledge; thus, trusting relationships lead to greater knowledge exchange as it facilitates voluntary exchange which promotes knowledge transfer activities (Ko, 2014). In trusting relationships, partners might not reluctant to each other's knowledge and advice (Jain et al., 2015).

However, most research conceptualizes and measure trust as a single-respondent view with respect to knowledge transfer, with a few exception Ko (2014). According to Ko (2014), this view has a limitation as trust involves bi-directional perception held by both participants.

Although a single-respondent view of trust has been proven to be a predictor of knowledge transfer behavior of individuals, there is limited empirical research on whether a dual-respondent view of trust will have a similar effect. Unlike a single-respondent view, the dual-respondent view (i.e., mutual trust) involves two actors where one may or may not display the same level and agreement of trust about the other (Ko, 2014).

On the other hand, the result of the exploratory study shown that mutual competence trust has an impact on the successful transfer of knowledge in the ISDO relationship. Accordingly, a client's lack of trust in a vendor's development capability will decrease the clients' motivation to acquire new knowledge and apply the knowledge received from the vendors. Likewise, the vendor's lack of trust in its client's technical knowledge may lead to disregarding the suggestions and feedback of clients during the project undertakings. Moreover, when the vendor lacks trust in its client's competence, the transfer of technical knowledge from the vendor related to the use and the technical possibilities of the new system becomes insufficient.

In this study, mutual competence trust refers to the extent to which a client-vendor dyad's high level of competence trust for each other is in agreement. Therefore, a better understanding of mutual competence trust in onshore ISDO relationship is critical to know the effect of a mutually trusting relationship on knowledge transfer success. Thus, the following hypothesis is proposed:

H11: Mutual competence trust is positively related to knowledge transfer in onshore ISDO relationship.

3.4.12. Mutual Competence Trust and Mutual Absorptive Capacity

Partners who trust the competence of the other to make critical suggestions and to have a positive influence on their thinking are more likely to get encouraged to acquire, absorb, and take decisive action on that knowledge (Lavin and Cross, 2004). According to Lane et al. (2001) trust increases the partners' willingness to assist each other to understand the new external knowledge. Moreover, if partners have trust towards each other, they become more willing to cooperate and to put in extra effort for transferring and acquiring the required knowledge when needed (Lee et al., 2008). Therefore, it is theorized that:

H12: Mutual competence trust is positively related to mutual absorptive capacity in onshore ISDO relationship.

3.5. Summary

This chapter comes up with the theoretical research model synthesized from literature, exploratory study, and two theories (i.e., KBV and SET) related to the seven constructs that make up the model along with relevant empirical findings from previous ISO studies. In brief, the research model links knowledge-related factors, namely knowledge transfer, knowledge utilization, and mutual absorptive capacity with onshore ISDO success. Furthermore, the model shows the linkages of four key factors (i.e., mutual disseminative capacity, mutual learning intent, mutual competent trust, and mutual absorptive capacity) with knowledge transfer. The research model also proposed the relationships among the knowledge factors. Besides, the chapter provides detailed discussion of the hypotheses implied by the research model.

Based on the proposed theoretical model and the hypotheses formulated in this chapter, the next chapter will discuss the research methodology in general and the research method employed, operationalization of the constructs, and the methods and techniques adopted to empirically test the hypotheses in particular.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. Introduction

Chapter 3 presents the conceptual (theoretical) research model developed from knowledge transfer and ISO literature, KBV and SET theories, and insights obtained from the exploratory study. This chapter deals with the research paradigm and the fundamental assumptions that informed and guided the conduct of this study. Moreover, the methodological choice, research strategy, and data collection techniques are covered at length in this chapter.

Hence, the remaining part of the chapter is organized into three main sections. Section 4.2 highlights the different research paradigms and basic assumptions that guide and inform scientific research. Under this section, justifications of the selected paradigm are made and the positions of the researcher concerning the four basic assumptions are also reflected. Section 4.3 covers the quantitative strand of the study including generation and evaluation of measurement items, operationalization of constructs, sample design, data collection methods, ethical issues, data analysis approach and tools, and profile of respondents. The last section summarizes the chapter.

4.2. Research Paradigm

Similar to other academic disciplines and research, the conduct of information systems research needs to be guided and governed by a research paradigm (Jokonya, 2016; Burke, 2007; Hirschheim and Klein, 1989). A research paradigm comprises of fundamental beliefs and assumptions through which a researcher makes claims the existence and nature of reality (ontology); the nature of knowledge (epistemology); the role of values and ethics in the research process (axiology); and the procedure and means of generating knowledge (methodology) (Myers, 2013; Wahyuni, 2012; Saunders et al., 2009). These philosophical assumptions together frame the nature of the research inquiry, guide the research to be undertaken, and indicate the researcher's role in the research process (Saunders et al., 2007; Khazanchi and Munkvold, 2002). Therefore, a clear and explicit reflection of the philosophical assumptions and beliefs is highly important for the researcher in order to show the research is undertaken with rigor and fairness and ensure the acceptance of the resulting knowledge by the scientific and academic communities.

Although researchers have different beliefs and values about the development of knowledge, all scientific research is based on some underlying assumptions about what constitutes credible research, which research strategies and methods are appropriate, and what is important and useful (Saunders et al., 2009; Saunders et al., 2007). There are four basic assumptions to distinguish the existing research paradigms from one another: ontology, epistemology, axiology, and methodology as explained below and summarized in Table 4.1.

Ontology is a branch of philosophy that is concerned with the nature of reality (Saunders et al., 2007). In the conduct of inquiry within a paradigm, the ontological assumptions of the researcher is about the nature of reality (Sanders 2009; Khazanchi and Munkvold, 2002). Saunders et al. (2009) highlight that the ontological assumptions made by a researcher determine what research objects and phenomena are focused on and, therefore, his/her choice of what to research in his/her in a research project. In other words, ontological assumptions portray what is taken as real and how that reality is known (Burrell and Morgan, 2019). Normally, the two key aspects of ontology that need to be considered are objectivism and subjectivism (Bryman & Bell, 2011; Saunders et al., 2007). Objectivism is an ontological position that asserts that social entities have an existence in reality external to and independent of social actors (Bryman & Bell, 2011). On the other hand, subjectivism holds that "social phenomena are created from the perceptions and consequent actions of those social actors concerned with their existence"(Saunders et al., 2009, p. 110). Therefore, the ontological stance of a researcher about the phenomenon under study can be either objective reality that is the social world exists by itself and is not influenced by the researcher or the measurement instruments, or subjective reality that is built up from the perceptions and actions of social actors.

Epistemology, on the other hand, refers to the assumptions about knowledge, especially about what constitutes acceptable and valid knowledge about the social world, and how knowledge about reality should be acquired (Burrell and Morgan, 2019). It focuses on the question of whether to adopt 'assumptions of the natural scientist' (objectivism) or the 'assumptions of the arts and humanities' (subjectivism) is suitable for the study of the social world (Myers, 2013; Saunders et al., 2009). Epistemologically, objectivism relates to the discovery of the truth about the social world through observable and measurable facts in a value-free way (Saunders et al., 2009), i.e., objectivity in the development of knowledge in the research process. In contrast to

objectivism, subjectivism focused on social actors' interpretations and perceptions of social realities, which claims to have a 'value-bound' stance (Bryman and Bell, 2011).

Axiology deals with values and research ethics (Saunders et al., 2019). It refers to the roles of values and ethics in the research process, which shows how a researcher deals with his/her values and the researcher's position concerning the subject under investigation (Saunders et al., 2007). Saunders et al. (2009) comment that the researchers' values demonstrated in all stages of the research process has great importance to come up with credible research results. For instance, a researcher may place more emphasis on the importance of data collected through interviews. This suggests that the researcher values face-to-face interaction with his/her respondents than their 'anonymous' responses expressed through a questionnaire. The researcher awareness of value judgments s/he is making in concluding from her/his data is also showing axiological concern (Saunders et al., 2019). From the above statements, it can be inferred that researchers need to recognize the positive impact of their values and beliefs on their research and then decide on how to deal with both their values and those of the respondents they are researching during the process.

The methodology is the fourth and final component of a research paradigm that is considered here in the study. Methodology refers to the philosophy or general principle that guides a research process within the context of a particular research paradigm (Adams et al., 2014; Wahyuni, 2012). It comprises the underlying sets of beliefs and assumptions that guide how research should be conducted (Saunders et al., 2009), enables a researcher to make an informed choice of one set of research methods over another (Wahyuni, 2012), and improve a researcher's understanding of the different ways through which knowledge can be discovered (Adams et al., 2014). Furthermore, Saunders et al. (2009) suggest that it is very essential for researchers to be clear about the distinction between research methodology and research method. A method is more specific and it consists of a set of specific procedures, tools, and techniques that are to be applied for researching whereas a methodology is generic and the philosophical foundation of a method (e.g., qualitative, quantitative or mixed-method research) (Adams et al., 2014; Wahyuni, 2012). Teddlie and Tashakkori (2009) also provided a clear-cut distinction between methodology and method. They define a the research methodology as a broad approach to scientific inquiry specifying how research questions should be asked and answered, including general preferences

for designs, sampling logic, analytical strategies, guidelines for making inferences, and the criteria for establishing quality. In contrast, they define research method as more specific strategies and procedures for conducting research, which includes research design, sampling procedures, data collection, data analysis strategies, and interpretation of the study findings.

As motioned above, the four basic beliefs (ontology, epistemology, axiology, and methodology) are the core components of a research paradigm and they together have an impact on the way researchers examine the social world. Generally, information systems paradigms fall into four categories: positivism, interpretivism, critical realism, and pragmatism (Goldkuhl, 2012; Oates, 2009; Hirschheim and Klein, 1989). These research paradigms as they relate to basic beliefs are summarized in Table 4.1 and discussed in the sub-sections below.

4.2.1. Positivism

Positivism is the oldest of the four research paradigms. It assumes that reality is objectively given, is measurable, and is independent of the researcher and his/her instruments (Myers, 2013; Oates, 2006). Under the positivism paradigm, natural science models, methods, and tools are seen as appropriate for studying the social world (Oates, 2006; Hirschheim and Klein, 1989). Positivist researchers formulate and test hypotheses to be proved or disproved by collecting empirical data (Myers, 2013; Saundars, 2007).

4.2.2. Interpretivism

Interpretivism paradigm, on the other hand, assumes that the social world is not objectively given. Rather, access to reality is subjective, i.e., it can only be accessed and transmitted to others through social constructs such as language, consciousness, shared meanings, and instruments (Myers, 2013). The primary focus of research undertaken within this paradigm is to understand and explain the correct meaning of a social phenomenon based on its context (Saundars, 2007; Orlikowski and Baroudi, 1991). In contrast to positivism, interpretivism does not predefine variables (independent and dependent), formulate and test hypotheses; rather the intent is to thoroughly understand social phenomena through the meanings that people attached to them (Myers, 2013; Oates, 2006). Unlike positivism, interpretivism research paradigm considers natural sciences' methods and tools as inappropriate for studying social and organizational phenomena (Myers, 2013). Moreover, interpretive studies do not believe a

researcher has an objective or neutral role, as in positivist research, but they see the researcher's role as interactive (Oates, 2006; Orlikowski and Baroudi, 1991).

Table 4. 1 Fundamental Beliefs of Research Paradigms [Based on Saunders et al. (2019, pp. 144-145), Saunders et al. (2009, p.119) and Wahyuni (2012)]

Fundamental Beliefs	Research Paradigms			
	<i>Positivism</i>	<i>Interpretivism</i>	<i>Critical Realism</i>	<i>Pragmatism</i>
Ontology (What is the nature of Reality?)	<ul style="list-style-type: none"> • Real, External, objective and independent of social actors • One true reality 	<ul style="list-style-type: none"> • Complex, rich • Socially constructed through culture and language • Multiple meanings, interpretations, realities 	<ul style="list-style-type: none"> • Is objective. Exist independently of human thoughts and beliefs or knowledge of their existence, but is interpreted through social conditioning 	<ul style="list-style-type: none"> • Complex, rich, external, multiple • View chosen to best achieve an answer to the research question • 'Reality' is the practical consequences of ideas • Flux of processes, experiences and practices
Epistemology (What constitutes acceptable knowledge?)	<ul style="list-style-type: none"> • Observable and measurable Facts • Scientific method • Focus on causality and law-like generalisations • Numbers • Causal explanation and prediction as contribution 	<ul style="list-style-type: none"> • Subjective meanings and Social phenomena. • Theories and concepts too simplistic • Focus on narratives, stories, perceptions and interpretations • New understandings and worldviews as contribution 	<ul style="list-style-type: none"> • Only observable phenomena can provide credible data, facts. • Facts are social constructions • Focus on explaining within a context or contexts • Knowledge historically situated and transient • Historical causal explanation as contribution 	<ul style="list-style-type: none"> • Practical meaning of knowledge in specific contexts • 'True' theories and knowledge are those that enable successful action • Focus on problems, practices and relevance • Problem solving and informed future practice as contribution
Axiology (What is the role of values in research?)	<ul style="list-style-type: none"> • Research is undertaken in a value-free way • Researcher is detached, neutral and independent of what is researched • Researcher maintains objective stance 	<ul style="list-style-type: none"> • Research is value-bond • Researchers are part of what is researched, subjective • Researcher interpretations key to contribution • Researcher reflexive 	<ul style="list-style-type: none"> • Value-laden research • Researcher acknowledges bias by world views, cultural experience and upbringing • Researcher tries to minimize bias and errors • Researcher is as objective as possible 	<ul style="list-style-type: none"> • Value-driven research. Values play a large role in interpreting the results, the researcher adopting both objective and subjective points of view • Researcher reflexive
Methodology (How research should be conducted in finding out about social reality?)	Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analyzed	Typically inductive. Small samples, in-depth investigations, qualitative methods of analysis, but a range of data can be interpreted	<ul style="list-style-type: none"> • Retroductive, in-depth historically situated analysis of pre-existing structures and emerging agency • Range of methods and data types to fit subject matter, quantitative or qualitative 	<ul style="list-style-type: none"> • Following research problem and research question • Range of methods: mixed, multiple, qualitative, quantitative, action research • Emphasis on practical solutions and outcomes

4.2.3. Critical Realism

Critical realism has a similar ontological stance with positivism but it is less objectivist than positivists (Saunders et al., 2019). According to critical realism, what we see and experience is the manifestations of the things in the real world, not the actual things (Saunders et al., 2019). Epistemologically, the critical research paradigm and interpretivism paradigm have similar

stance- they both assert that social reality is created and re-created by people; however critical researchers believe that interpretations, shared understandings, and meanings are not enough to understand and know social reality (Oates, 2006; Myers, 2013). As a result, critical researchers go further and raise questions of why a certain way of seeing the social world dominates and it represents reality (Oates, 2006). Researchers in the critical research paradigm assumes that all interpretations are not getting equal weights in a social world, some interpretations are preferred over others for some reasons (Myers, 2013). Therefore, critical researchers focus on dominations, oppositions, conflicts, contradictions and status quo in the social world (Myers, 2013; Oates, 2006; Orlikowski and Baroudi, 1991).

4.2.4. Pragmatism

Pragmatism is another category of the research paradigm. It argues that the research question is the key determinant of the research paradigm to be adopted in the research inquiry (Saunders, 2007; Jokonya, 2016). On the other hand, if the research question lacks a clear indication of the specific research paradigm (positivist or interpretivist) to be used, the pragmatist's view supports the possibility of working with both positivist and interpretivist paradigms (Saunders, 2007). Pragmatist researchers are more interested in practical solutions to the research problem than arriving at abstract distinctions (Saunders et al., 2019). They rely on a practical approach by combing the different philosophical assumptions to help them a better understanding of social reality (Wahyuni, 2012).

4.2.5. Justifications for the Adoption of the Positivist Paradigm

According to Saunders et al. (2009), one research paradigm is not superior or inferior to any other, rather the different paradigms provide alternative ways and enable researchers to understand things differently. These authors also state that the choice of the research paradigm needs to be informed by the purpose of research. After considering the four underlying research paradigms, the current study was informed and guided by the positivist research paradigm for the following reasons.

Firstly, this study seeks to develop and validate a theoretical model consisting of testable hypotheses in an attempt to know the effect of the key knowledge factors on onshore ISDO success from the perspectives of both client and vendor organizations. In the field of information

system, positivist information systems research is characterized by its "formal propositions, quantifiable measures of variables, developed testable hypotheses, and drawing of inferences about a phenomenon from the sample to a stated population" (Orlikowski and Baroudi, 1991, p. 5). Hence, the positivist paradigm is suitable for this study as it intends to make inferences about the effect of knowledge-related factors onshore ISDO success within the context of a developing economy, based on the sample taken from onshored ISD projects studied. As discussed in Chapter 3 (Section 3.4), the theoretical model is developed based on the synthesis of the background literature, the use of two theoretical lenses (KBV and SET), and is further informed by findings from an exploratory study. The theoretical model is then subjected to empirical testing in order to prove or disprove the relationships between variables, which is a defining feature of the positivist paradigm.

Secondly, the phenomenon under investigation is onshore ISDO success from a knowledge-based perspective. The study adopts a questionnaire instrument to quantify the measurement of variables, uses mathematical computations to calculate the scores of constructs having general and multiplicative measures, and utilizes statistical techniques and tools to test predetermined hypotheses. More specifically, SmartPLS 2.0 M3 is employed as a statistical tool that enables model validation (i.e., reliability and validity of the measures) and tests of hypothesized relationships among the constructs at its measurement and structural model levels, respectively. According to Oates (2006), the use of mathematics and statistical analysis provide objective means of analyzing observations and results for positivist researchers. All these aspects of the research are supportive of the rationale for choosing the positivist paradigm to the development of knowledge.

Thirdly, consistent with the positivist assumptions, the researcher assumes that the researcher and reality are separate and the results obtained from the research should be the same (or replicable) regardless of who conducts the research and the occasion (Creswell, 2009, Oates, 2006). The rationale behind such a belief is that the researcher had collected the required data by following rigorous procedures for designing, developing, and validating measurement instruments, and adopted scientific methods, techniques, and tools for hypothesis testing, data analysis, and generalizing.

Lastly, the researcher's prior research experience about quantitative methods as well as the training participated at different times about the applications of statistical software involving quantitative data inputting, processing, and analysis made the positivist paradigm the primary choice of this study. Moreover, due attention is given to the positivist research paradigm as it dominates information systems research (Oates, 2006).

To summarize, this study was informed and guided by the positivist research paradigm and the researcher's ontological, epistemological, axiological, and methodological positions taken in conducting the current research were as follows:

- **Ontologically**, the researcher assumes that reality is "external, objective and independent of social actors and their interpretations of it" (Saunders et al., 2009, p. 119). In other words, the researcher believes that knowledge factors and onshore ISDO success issues are objective phenomena. As a result, the effect of knowledge-related factors on onshore ISDO success, and the relationships among the constructs of the proposed research model can be measured independent of the researcher using instruments, the collected data can be presented in a tabular statistical data, and can be tested empirically using statistical analysis tools and techniques (Hair et al., 2017).
- **Epistemologically**, the researcher has a stance of only observable phenomena and measurable facts would lead to the production of credible and meaningful data (Saunders, 2007, Oates, 2006). Hence, the researcher focused on developing theories about the topic of interest after gaining important insights from knowledge transfer and ISO literature, exploratory study, and KBV and SET theoretical lenses, see Section 2.8.4. The formulated theories lead to the gathering of data, which then provided the basis for subsequent testing of the hypothesized relationships. The prescribed statistical methods and rigorous hypothesis testing procedures adopted were believed to help the researcher to explain and predict knowledge-related behaviors of organizations involved in onshore ISDO engagements.
- **Axiologically**, the researcher's position is that the researcher remains neutral and objective in the research process to avoid biases in the research findings (Myers, 2013; Oates, 2006). As far as possible, the researcher gave due attention to ensure that the study was undertaken in a 'value-free' way. For instance, the researcher developed self-administered survey questionnaires and distributed them to the participants of the study for their possible

answers. Then, the completed questionnaires were collected from each respondent and these responses were made the basis for data analysis and the study's findings. Besides external to the data collected, the researcher took key ethical issues into consideration such as informed consent, confidentiality, and anonymity of study participants. A brief highlight of ethical issues is provided in Section 4.3.7.

- **Methodologically**, the research was based on a quantitative dominant type of mixed-methods research strategy. The quantitative research method and strategy followed the deductive method of reasoning for the purposes of testing and confirming, in whole or part, or refuting, the developed hypotheses. Furthermore, the emphasis was given to qualitative data (i.e., obtained the exploratory study) that informed the initial conceptual framework. Here-in-below, Sub-section 4.2.6 provides the justification for the research methodology employed by the current study.

4.2.6. Methodological Choice and Its Justification

As stated in Section 4.2.5, the current study was conducted based on the positivist research paradigm. The main purpose of the study was to examine onshore ISDO success from knowledge-related factors. The testing of the formulated hypotheses demands the use of numerical data and statistical analyses, sample size determination, and making generalization of results from the sample to a larger population. For research having such characteristics, quantitative survey research is a preferred option (Teddlie and Tashakkori, 2009; Creswell, 2009).

According to Creswell (2009), the quantitative survey method has been found to be the preferred method for testing a theory, but it has limitations and it needs to be supplemented by qualitative method when (a) a researcher doesn't know the important constructs to examine, (b) the topic under study is new and existing theories do not provide better understandings of it, and (c) identifying and incorporating suitable items and scales in the survey instrument are needed. In addition, Johnson et al. (2007) point out that qualitative data can play important roles in assisting the quantitative strand of a study by helping with conceptual and instrument development (at the research design stage) and by interpreting, clarifying, and describing quantitative results (at the data analysis stage). Similarly, Cassell et al. (2018) argue that the mixing of quantitative and qualitative methods facilitates quantitative research undertakings by

providing hypotheses or informing the design of survey questions and interpreting the relationship between variables that are established in the quantitative part.

In short, this study intended to investigate onshore ISDO success from the perspective of knowledge-related factors at the dyadic level. However, the existing theories lack to provide a better explanation and comprehensive understandings of the dyadic level constructs of the research model. As a result, combining quantitative and qualitative research can provide better insights for investigating a phenomenon (Jokonya, 2016; Teddlie and Tashakkori, 2009). Johnson et al. (2007) further indicated that researchers combine quantitative and qualitative research for the reasons of gaining a better and deeper understanding of the research problem as the limitations of one method being compensated by the strengths of another.

Therefore, the research methodology employed in this study is a mixed-methods research strategy. Johnson et al. (2007, p. 123) offered a general definition of mixed-methods research as follows:

"Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration."

More specifically, the current study is based on the sequential transformative type of mixed-methods research design strategy. In the transformative mixed-method design strategy, a researcher needs to devise a theory-based framework that entails a research design that comprises quantitative and qualitative data (Creswell, 2009). The framework guides hypotheses development, design, and development of measurement instruments, data collection, and prediction of the outcomes. Thus, as the current study used qualitative exploratory study (see Chapter 3 for details qualitative study's method and findings), literature review, and two theoretical lenses in drawing the theoretical framework which was then validated using a SmartPLS 2.0 M3 statistical tool in combination with some qualitative data. Moreover, this study is a quantitative dominant type of mixed-methods research, the qualitative aspect of the study has a more limited role. According to Johnson et al. (2007), a quantitative dominant type of mixed-method research is better chosen when the researcher relies on a quantitative method and he/she also believes that the insights gained from qualitative data would benefit the research. This is consistent with the selected research paradigm and the stated purpose of the study.

The next sections discuss the specific research methods followed in order to implement the mixed-methods research strategy.

4.3. Quantitative Method

As indicated earlier, the quantitative method is the main part of this research. It was conducted through a survey. Survey research was chosen as it allows the researcher to collect data objectively through standardized questionnaires, test theories in an unbiased fashion using statistical tools, and enable the generalization of the findings from a sample to a population (Creswell, 2009). Particularly, a cross-sectional type of survey research was used for this study.

Here-in-after, Sub-section 4.3.1 to Sub-section 4.3.7 provide discussions on generation and evaluation of measurement items, operationalization of constructs, sample design, and data collection methods, ethical considerations, data analysis methods, and profile of respondents.

4.3.1 Generation and Evaluation of Measurement Items

The variables in this research model were latent and could not be measured directly. As a result, the generation of measurement indicators to operationalize each construct is required. This section discusses the five steps carried out to generate and evaluate the measurement instruments used in this study. Based on MacKenzie et al. (2011) and Moore and Benbast (1991), the five steps include develop a conceptual definition of the construct, generate pools of items to represent each construct, select measurement items from the initial pool of items, create a draft questionnaire, and pilot test.

Step 1: Develop a Conceptual Definition of the Construct

This step involves defining the conceptual domain of the construct. To conceptualize the construct, a review of prior theoretical and empirical research on the focal construct and the meaning of closely related constructs is vital (MacKenzie et. al, 2011). In addition, important insights were obtained from the qualitative exploratory study to conceptualize the constructs (see Section 3.4).

Step 2: Generate Pools of Items to Represent each Construct

After the provision of the conceptual definition of each construct (see Section 3.4 of Chapter 3), a pool of items that represents the conceptual domain of the construct under examination was generated from the previously employed instruments (Straub, 1989; MacKenzie et al, 2011). In

addition to the literature review, additional items deemed to fit the construct definition can be created (Hinkin, 1998). The second step aimed to draw representative measurement instruments from a universal pool to ensure a content-valid instrument (MacKenzie et al, 2011). Based on the detailed review of existing theoretical and empirical literature, and the insight gained from the exploratory study and discussions with supervisors, an initial pool of items (184 in total) were generated (see Appendix 4.2a).

Step 3: Select Measurement Items from the Initial Pool of Items

At this step, the selection of items that are supposed to measure the constructs was done from the initially generated pool of items. While making such a selection, we considered the following basic points:

- convergent and discriminate validity values of previously utilized measurement items (Moore and Benbast,1991) that meet the cut-off value or the generally accepted rule of thumb (Gefen et al., 2000). While selecting items from their initial pool based on convergent validity, factor loadings with their respective constructs should be 0.70 or higher (Hair et al., 2017). On the other hand, the selection of items based on discriminant validity focused on cross-loadings,i.e., each item should have a higher loading on the construct that it intended to measure than its cross-loading on other constructs (Gefen et al., 2000).
- items with clear wording or not lengthy (Straub,1989; MacKenzie et al, 2011),
- items with a narrow focus and can be applicable in a specific context (Moore and Benbast,1991),
- items addressing only a single issue, free of “double-barreled” items (Hinkin,1998; MacKenzie et al., 2011).

The selection step at the end left a total of 96 items as shown in Table 4.2. These selected measurement items were used as candidates for a draft questionnaire. The initially selected measurement items from the pool of items are colored in blue in Appendix 4.2a.

Step 4: Create a Draft Questionnaire

Based on the selected and adapted measurement instruments from the pool of items, a draft questionnaire was created and subjected to further evaluation. According to Straub (1989),

although the use of previously employed instruments saves the time for developing a completely new instrument, the employment of these instruments is problematic from methodological and validity perspectives for two basic reasons. First, it is misleading to accept all existing instruments are evaluated and confirmed for their content validity.

Second, in practice, researchers have been adopting previously validated instruments by adapting the original instruments. When a validated instrument is changed for its format, order, and wording, the resulting instrument will lack the validated qualities of the original instrument (Straub, 1989). Thus, to confirm the content validity, the draft questionnaire was made to be reviewed by three academic staff at Addis Ababa University (two lecturers and one assistant professor) who have experiences in information systems development projects and survey research method and four project managers (two from clients side and the other two from vendors). Iterative personal interviews with these academic staff and managers were conducted to ensure the completeness, wording, and appropriateness of the instrument. The comments and suggestions made by academic experts and practitioners and the actions taken on the draft questionnaire as a result of their consultations are given in Table 4.3.

Step 5: Pilot Test

To further strengthen the content validity of the draft survey instruments, the questionnaire was piloted by eight project managers, four from clients, and four from vendors. Respondents first completed the questionnaire, and then they were asked to comment on the clarity of instructions, comprehensibility of the questions, and their presentation. Based on the feedback from the pilot test, rearrangement of sections, refinement of instructions, and dropping of ambiguously worded or redundant items were made (see Table 4.4).

In the end, a total of 48 measurement items for representing the constructs of this study were used and the final version of the questionnaire was produced, see Appendix 4.2b and Appendix 4.2c. The next section presents the discussion and the operationalization of constructs of the research model.

Table 4. 2 Number of Initially Selected Items

Construct	Initial No. of Items	No. of Items Selected	No. of Items dropped	Reason for Dropping Items
ISO success	33	11	22	<ul style="list-style-type: none"> • An item is repeated, i.e., the same item is used by two or more authors by adapting it. • Some items are not reflecting mutual ISO success, i.e., items measure either the client or the vendor perspective of success. • Ambiguously worded items.
Knowledge transfer	25	16	9	<ul style="list-style-type: none"> • An item is repeated, the item is used by two or more authors by adapting it. • Ambiguously worded items.
Knowledge utilization	9	9	-	All items taken.
Disseminative Capacity	26	15	11	<ul style="list-style-type: none"> • The context is different, from IJVs, i.e., items are not in ISO context. • Focuses on knowledge transfer between employees of the same organization. • Items addressing not a single issue, measuring broader issues. • Items that are unclear.
Absorptive Capacity	31	15	16	<ul style="list-style-type: none"> • An item is repeated, the same item is used by two or more authors by adapting it. • Items that are unclear. • Items reflecting only the client's perspective.
Learning Intent	28	15	13	<ul style="list-style-type: none"> • The context is different(i.e., in IJVs, strategic alliances, and marketing) with a clearly defined learning objectives for forming such inter-firm cooperation. So, measures found in these contexts are less appropriate to the ISO relationship. • Knowledge transfer is taking place within an organization. Thus, items are designed to measure learning intent of individuals at intra-organizational level.
Competence Trust	32	15	17	<ul style="list-style-type: none"> • An item is repeated, i.e., the same item is used by two or more authors. • Items are not in ISO context. Items measuring more of individual level of trust within an organization or within multinational firms. • Trust is a multidimensional • Trust has many dimensions(competence and benevolence trusts). Results from the exploratory study shows competence type of trust. Thus, items for measuring benevolence trusts are omitted.
Total	184	96	88	

Table 4. 3 Comments and Suggestions made on a Draft Questionnaire

Comments/Suggestions	Action Taken
<ul style="list-style-type: none"> Split concepts joined by and/or. For example, in measuring disseminative capacity of the source, one of its items was written as, <i>"the client can identify and clearly explain both orally and in writing what we need and expect from them"</i>. 	<ul style="list-style-type: none"> Suggestion accepted. An item needs to address a specific issue. Thus, this item is omitted. In instead, the measures of Ko et al. (2005) were adapted for this research as follows: <ol style="list-style-type: none"> the vendor's/client's oral communication was easy to understand. the vendor's/client's written communication was easy to understand.
<ul style="list-style-type: none"> Missed sub-sections in the Project Information Statement. 	<ul style="list-style-type: none"> Suggestion accepted, III) Aim of this Research/Project.
<ul style="list-style-type: none"> Arrange questions based on variables and their associated measures instead of writing questions numbered from 1 to 100. 	<ul style="list-style-type: none"> Constructs and their respective measures are given.
<ul style="list-style-type: none"> Terminology, For example, onshore, what does it mean?. Moreover, inconsistency in terminology. For example, information and knowledge. 	<ul style="list-style-type: none"> The term onshore is made to be clear in the sub-sub section(<i>aim of the research</i>) as: [...] onshore/domestic ISO success in Ethiopia. the term information is deleted and the term knowledge was used.

4.3.2. Operationalization of Constructs

Seven-point Likert scales (ranging from 1 = Strongly Disagree to 7 = Strongly Agree) were used to measure all items. This seven-point Likert Scale was selected because (1) the chance of getting reliable responses from participants in a survey is higher (Joshi et al. 2015; Finstad, 2010); (2) it has been widely used in academics and industry research. ISDO success was operationalized as the overall mutual organizational benefits obtained from ISDO by both outsourcing partners, including satisfaction with the developed information system, completion of the project on agreed time, the achievement of project objectives, values derived from IS outsourcing, and satisfaction with the outsourcing relationship.

Seven items adapted from (Deng and Mao, 2012; Teo and Bhattacharjee, 2014; Patnayakuni et al, 2007; Xu and Yao, 2014; Tiwana, 2004; Westner and Strahringer, 2010; Park et al., 2012; Lee, 2001; Koh and Straub, 2004; Schwarz, 2014) and one newly developed item (C/V_SU4) (see Section 3.2.3.3) were used to measure mutual ISO success. The measure of ISDO success consists of both general and multiplicative measures (Nelson and Cooprider, 1996; Ko et al., 2005; Pee et al., 2010). As a result, calculations of the score of each item of a construct having both general and multiplicative measures are demanded before the analysis of the quantitative data, see Chapter 5.

Table 4. 4 Feedback From the Pilot Test and Actions Taken

Comments/Suggestions	Action Taken
<ul style="list-style-type: none"> • Ambiguity with respect to answering the questionnaire. For example, Section II(IV) '<i>Name of Outsourced Information Systems Project</i>'. <ul style="list-style-type: none"> ○ It seems to list down and evaluate the different projects of a client that have been undertaken by different vendors within a single questionnaire. ○ Thus, it is better to clarify that the questionnaire needs to be filled for a specific project that is undertaken by a specific vendor. 	<ul style="list-style-type: none"> • The statement was rewritten as '<i>Name of the Outsourced Information System development Project</i>'. Moreover, in Section Two, the instruction, '<i>Related to your specific information system development project mentioned in Roman numeral IV of page 3</i>' was added.
<ul style="list-style-type: none"> • Rearrangement of Sections. Instead of making respondents to start with main questions of the questionnaire, it is good to make them start with the general questions then end with main questions. This provides respondents with general information about the focus area and it motivates to answer the rest questions. • Omit the estimated minutes(30 mnts.) for filling the questionnaire from page 1 (Roman numeral IV) of Project Information Statement. This might make respondents less motivated to spent 30 minutes on the questionnaire, perceived as lengthy. • Where to place and categorize the industry type/ company type that is not found in the already provided list? 	<ul style="list-style-type: none"> • Rearrangement of Sections was made. As a result, Section One (General Questions about the Respondents) and Section Two (Main Questions). • The estimated 30 minutes for completing the questionnaire was omitted. • No action taken as the option, '<i>Others, please specify</i>' is already given.
<ul style="list-style-type: none"> • Duplicate/related items within a construct. For example, <ul style="list-style-type: none"> ○ '<i>[...] a project goal was achieved</i>' and '<i>This cooperation has achieved planned goal</i>' in ISO construct; ○ '<i>[...] share know-how from work experience with each other</i>' and '<i>[...]shared experience or know-how from work[...]in knowledge transfer</i> construct. ○ '<i>[...]expresses his/her ideas clearly</i>' and '<i>[...] we can easily communicate ideas to our client[...]</i>' 	<ul style="list-style-type: none"> • Suggestions accepted. Only one item was used for duplicated items.
<ul style="list-style-type: none"> • Items not reflecting the intended construct to be measured. For example, the item of learning intent construct '<i>Through interaction with the with the client, our team has learned about the client's business domain knowledge</i>' creates confusions with that of knowledge transfer. 	<ul style="list-style-type: none"> • Suggestion accepted. Items of such type were revised and deleted.

Knowledge transfer was operationalized in terms of a bidirectional flow of knowledge between the vendor and the client. Achieving a successful development outcome demands the transfer and application of specialized business and technical knowledge. Thus, based on the exploratory study (see Section 3.2.3.2.), five items were adapted from (Xu and Yao, 2014; Park and Lee, 2014; Simonin, 2004; Dhanaraj et al., 2004; Lee, 2001; Lee et al., 2008) to measure knowledge

transfer by capturing both business and technical knowledge. The five items assessed the flow of business knowledge from the client to the vendor. Similarly, the flow of technical knowledge from the vendor to the client was assessed by five items. The measures of knowledge transfer contain multiplicative type measure; therefore the score of each item needs to be calculated for facilitating statistical analysis, see Chapter 5.

Knowledge utilization was operationalized as the extent to which the transferred knowledge is used by outsourcing partners in accomplishing outsourcing tasks and internal business activities of the partners. The measures of knowledge utilization were adapted from (Teo and Bhattacharjee, 2014; Ko et al., 2005; Xu and Ma, 2008; Chen et al., 2014; Deng and Mao, 2012; Tiwana, 2004) and based on the newly developed items (items C/V_KU1 and V_KU2) from the exploratory study (see Section 3.2.3.2). The scores of knowledge utilization were assessed with two general measures and three multiplicative measures. The calculations of item scores for such measures are given in chapter 5.

However, the remaining four constructs of the conceptual model (mutual competence trust, mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent) are dyadic level constructs (see Section 3.4). This particular section gives the operationalized definitions of each construct and indicates the sources of items adapted as well the new items developed for measuring the constructs, but item score calculations for those dyadic level constructs are done in next chapter, data preparation.

Thus, the measures of competence trust were based on (Jain et al., 2015; Pacharapha and Ractham, 2012; Ko, 2014; McAllister, 1995; Chowdhury, 2005; Levin and Cross, 2004). However, there is a lack of formalized methods for measuring and evaluating mutual trust in a dyadic business relationship. In the trust literature, there are many approaches to measure mutual trust. In this study, mutual competence trust was operationalized as the extent to which a client-vendor dyad's high level of competence trust for each other is in agreement. To calculate mutual competence trust, the approach used by Ko (2014) for calculating mutual trust was adopted, see Chapter 5.

Based on the findings of the exploratory study (Sections section 3.2.3.2 and 3.2.3.4), nine items were adapted from (Schulze et al., 2013; Williams, 2011; Ko et al., 2005; Xu and Ma, 2005;

Park et al., 2012; Winkelbach and Walter, 2015; Teo and Bhattacharjee, 2014; Cummings and Teng, 2003) to operationalize the disseminative capacity. Mutual disseminative capacity was operationalized as the extent to which a client-vendor dyad's high level of disseminative capacity to transfer the required knowledge for each other is in agreement. Chapter 5 shows the calculation of item scores of mutual disseminative capacity.

To measure absorptive capacity, six items were adapted from the works of (Ko et al., 2005; Chang et al., 2012; Wang et al., 2007; Xu and Ma, 2005; Tiwana, 2004; Winkelbach and Walter, 2015; Lee, 2001). Mutual absorptive capacity was operationalized as the extent to which a client-vendor dyad's high level of absorptive capacity for each other's new external knowledge is in agreement. The next chapter gives details of item score calculations of the construct.

Lastly, learning intent was measured by six items adapted from (Tsang, 2002; Deng and Mao, 2012; Hau and Evangelista, 2007; Teo and Bhattacharjee, 2014; Simonin, 2004) and one newly developed item (C/V_LI1). In the current study, mutual learning intent was operationalized as the extent to which a client-vendor dyad's high level of learning intent to learn knowledge and skills from each other is in agreement; see the next chapter for details of item score computation of the construct.

4.3.3. Sample Design

Sample design is an important part of a quantitative study. It mainly deals with making decisions on the sampling frame, sample size, and respondent selection. This sub-section provides a discussion of the choices made on these main points related to the current study.

4.3.3.1. Sampling Frame

The population for our study was information systems development projects that have been undertaken by local software vendors operating in Ethiopia for clients within Ethiopia and located in the city of Addis Ababa. However, to the best of our knowledge, no database aggregates data for information systems projects that were undertaken by local outsourcing means at the federal and Addis Ababa City Administration levels in Ethiopia. Instead, the list of 382 software development companies and their contact addresses were obtained from the database of CITSRD of MCIT on August 19/2016, at the time of conducting the research.

4.3.3.2. Sample Size

A purposive sampling technique was adopted to select a survey sample. The purposive sampling technique allows the researcher to purposely chooses subjects who are relevant to the study (Sarantakos, 2005). In this study, clients are private and public sector organizations.

In order to determine the initial sample size, two criteria were employed. First, public sector organizations' ISD projects were considered. This is mainly because recent data about outsourced IS development projects of public sector organizations at the federal and Addis Ababa city levels and data of the associated vendors can be obtained from the E-government Directorate of MCIT and the Addis Ababa City ICT Development Agency respectively. Moreover, public sector organizations are the main players in the domestic ISO market (MCIT, 2014; Lixi and Dahan, 2014). Second, important information was obtained from the 2016 ICT Ethiopia Exhibitors' Guide related to some local vendors' accomplished ISD projects since their establishments and their clients. This criterion is formulated based on the lesson we learned from our exploratory study. As mentioned in Section 3.2.2, a registered software development company may get practically involved in other related business activities such as network installation and maintenance and sales of computer hardware parts.

Based on the first criterion, 152 e-government IS development projects of 35 public sector organizations were done by 20 vendors at the federal level including ministries, agencies, and authorities were selected. In the Addis Ababa City Administration, 10 projects that were undertaken by 8 vendors and 10 client organizations were selected. Considering the second criterion, we got 35 vendors that were involved in 130 information systems development projects of 54 clients that include both private and public sector organizations. Therefore, the sample size of this study was 292 information systems development projects that were undertaken by domestic outsourcing means involving 63 vendors and 99 clients. Two separate surveys were necessary to match the vendor and the client project managers on each project. In the first survey, questionnaires were distributed to the vendor project managers or individuals with an equivalent title. Each project manager of the vendor was asked to snowball the client organization outsourcing the specific project. Then, a similar questionnaire made distributed to the client project manager or individual with an equivalent title. In other words, each vendor

project manager made to name an outsourced ISD project and the client organization outsourcing the project (see APPENDIX 4.2c, Section one, parts III and VI). Based on the responses obtained from the vendors, the researcher asked the client organizations to participate in the study and identify the project managers of the stated projects. Section 4.3.4 provides further details.

4.3.3.3. Respondents Selection Criteria

The unit of analysis in this study is an onshore information system development outsourcing project in a dyadic relationship. Therefore, matched-pair data for each project needs to be collected from both client and vendor. Therefore, client and vendor project managers were considered the most appropriate respondents. A client project manager (or equivalent title) is an individual who has experience in managing outsourcing contracts and responsible for at least one project. A vendor project manager (or equivalent title) is an individual who has experience in managing outsourcing contracts and responsible for at least one project.

Respondents were identified first by asking the heads of the vendor companies/organizations. Those who agreed to participate in the research project were given participation requirements and asked to identify appropriate projects and nominate project managers or individuals with an equivalent title who were in charge of managing these projects. Project selection was based on two criteria. First, projects that were recently completed, i.e., projects that were completed within the previous twelve months, at the time of conducting the research. Consideration of this timeframe allows a respondent to evaluate a project outcome with a reasonable memory recall (Ko, 2014). Second, ongoing projects that were entered in their last implementation stage (at the time of conducting the research); this is based on the assumption that the knowledge intensive activities had already been taken place.

4.3.4. Data Collection Methods

To empirically test the research model, matched-pair questionnaire surveys involving client project managers, and vendor project managers of domestically outsourced information systems development projects were conducted. In other words, the data were obtained in two separate surveys. In the first survey, data were collected from the vendors using a self-administered questionnaire. Once responses were obtained from vendors, the other survey was conducted by distributing the same questionnaire to the clients that were identified or named by their respective vendors. Mostly, vendors are the main providers of technical knowledge and

recipients of business knowledge. Therefore, as knowledge recipients, vendors were asked to provide data about business knowledge transfer from their clients, utilization of the transferred business knowledge, ISDO success, and their trust towards the competence of clients. Moreover, as technical knowledge providers, vendors were asked about their clients' disseminative capacity, absorptive capacity, and learning intent. On the other hand, clients are the main providers of business knowledge and recipients of technical knowledge. As knowledge recipients, clients were also asked to provide data about technical knowledge transfer from their vendors, utilization of the transferred technical knowledge, ISDO success, and their trust towards the competence of vendors. Besides, clients were asked about their vendors' disseminative capacity, absorptive capacity, and learning intent. This was based on the assumption that if respondents were made to reflect on their actual behaviors related to their disseminative and absorptive capacities and intent to learn, they may be biased and unnecessarily inflated their responses related to these three constructs. Thus, it was believed as a reasonable technique to gather these data from the more appropriate respondent.

Since the responding organizations are located in different parts of the city of Addis Ababa, the researcher was personally distributing 190 matched-pair survey questionnaires to the respondents (i.e., client project managers and vendor project managers) of 190 projects. Following the handing of the questionnaire to the respondent, follow-up personal visits, phone calls, e-mails, and SMS messages were made. In total, 326 follow-up personal visits (twice to each respondent's organization on average), 80 follow-up phone calls, 30 e-mails follow-up, and 40 follow-up SMS messages. In five months (from March 2018 to July 2018), responses from 163 projects were received (85.8 % return rate). The main reason for this high return rate was the researcher established good relationships with key individuals during the conduct of interviews of the exploratory study. These individuals played a vital role to encourage their colleagues to be cooperative for this project.

4.3.5. Data Analysis Approach and Tools

In order to analyze the quantitative data SmartPLS 2.0 M3 software tool was used. Partial Least Squares (PLS) was used for three main reasons. First, PLS is a more appropriate analysis tool for exploratory study when:

[...] there was no well-established theory that could directly serve as the theoretical foundation of the hypothesized relationships (Penga and Lai, 2012, p. 496).

As the current study intended to explore the relationships among the theoretical constructs and to assess the predictive validity of the independent variables, it is logical to employ SmartPLS as a suitable analysis tool. Second, the complex nature of the research model was the other reason to choose SmartPLS. Penga and Lai (2012) suggest that researchers consider PLS when the research model is complex involving, for example, cross-multiplying of items of another construct to produce indicators of a new construct. According to these authors, such cross-multiplying of items can generate many indicators and may lead to estimation problems, but PLS has the potential to estimate highly complex models. Hence, the use of PLS can alleviate the problems associated with the complexity of the current study's conceptual model. For instance, some constructs have general and multiplicative measures demanding to sum and taking the average of two items and multiplying two items, respectively. Other constructs' measures are determined following the appropriate mathematical calculations as discussed in Chapter 5. Third, PLS does not require multivariate normal distribution of the sample data (Penga and Lai, 2012; Gefen et al., 2000).

Using the SmartPLS 2.0 M3 (Ringle, 2005) statistical software, we first examined the measurement model to assess reliability and validity before testing the structural model, the necessary details are given in Chapter six.

4.3.6. Profile of Respondents

A total of 190 questionnaires were distributed to 95 client organizations and 68 vendor firms. However, data were obtained from a total of 163 projects from 81 client organizations and 55 vendor firms, which represent an 85.8 % return rate. Not all projects yielded a data point for the analysis; only those data points with a completed vendor survey and a completed client survey were included. The final sample consists of 150 projects involving 73 client organizations and 51 vendor firms. More specifically, out of the 150 projects, 130 projects were matched-paired, i.e., one client project manager and one vendor project manager paired to fill out the survey questionnaire for a specific project they managed by representing their respective organizations. However, in the remaining 20 projects, 15 client project managers from the clients' side and 20

project managers from the vendors' side were each involved in managing one additional project. Thus, they responded to these projects besides their responses in the 130 matched-pair projects.

While 110 projects (73.3%) represented public sector organizations, the sample included 40 projects (26.7%) of private sector organizations. With regard to project status, 130 projects (86.7%) are recently completed (i.e., at the time of conducting this study) and 20 ongoing projects (13.3%) are close to their implementation phase, at the time of conducting this study. All 51 participating vendor firms specialized in application software development. The majority of the participants (both clients and vendors) were less experienced in information systems outsourcing or managing outsourcing relationships. Most (123 or 46.4%) had 1 to 5 years at the time of the study, 98 (37%) had 6 to 10 years, 35(13.2%) had 11 to 15 years, and 9 (3.4%) had more than 15 years at the time of the study.

In terms of industry, most projects were conducted at companies in the sectors of education (29) and technology/communication (20). Other sectors were construction (road/housing) (13), travel/tourism/hotel (12), justice system (10), trade (10), agriculture (5), health/medical (5), manufacturing (9), road transportation (6), energy (6), finance/banking/insurance (3), defense (3), café (3), water and sewerage(3), brewery (2), mining (1), and other sectors (10). The characteristics of the respondents including categories of organizations, number of projects, project status, industry type, and experiences of project managers are shown in Tables 4.5 to Tables 4.7.

Table 4. 5 Category of Organizations, Projects, and Project Status

Organizations		Projects			
Category	Number of Participants	Representation	Number of Projects	Project status	Number of Projects
Client	73	Public sector	110	Completed	130
Vendor	51	Private Sector	40	Underway	20
Total	124	Total	150	Total	150

Table 4. 6 Industry Distribution

Industry	Number of projects
Technology/Communication	20
Education	29
Agriculture	5
Manufacturing	9
Brewery	2
Construction(Road/housing)	13
Energy	6
Finance/banking/Insurance	3
Health/medical	5
Travel/Tourism/Hotel	12
Café	3
Justice System	10
Water and sewerage	3
Trade	10
Road Transportation	6
Defense	3
Mining	1
Others	10
Total	150

Table 4. 7 Project managers Experience

Experience	Number of Managers	
	Client	Vendor
1-5 yrs	72	51
6-10 yrs	48	50
11-15 yrs	15	20
>15 yrs	0	9
Total	135	130

4.3.7. Ethical Considerations

As per the Information Technology Doctoral Program Research Committee (IT DPRC) Guidelines of Addis Ababa University, a researcher is required to identify ethical issues before starting his/her research and provide a description on how to deal with them. Accordingly, three key ethical issues; namely, informed consent, confidentiality, and anonymity were considered for the research participants of this study. The identification and the ways to manage the three ethical issues were guided or informed by Wiles (2013) and Terrell (2012) ethical guidelines. Below is given a brief highlight of each ethical issue that was adapted from the guidelines and made to fit the research context.

Informed consent involves making research participants aware of " *what the research is about; why it is being conducted; who is funding it; what will happen to the results and how they will be disseminated; what their participation in the project will involve; what the potential risks and benefits of their involvement might be; and, how issues of anonymity and confidentiality will be managed*" (Wiles, 2013, p.25). In sum, participants' consent must be given voluntarily without encouragement (e.g., payment for their participation) and enforcement. Research participants have also the right to withdraw from the study any time they want.

Besides informed consent, issues of confidentiality and anonymity are key considerations in ethical research practice. Confidentiality deals with keeping identifiable information about individuals or organizations collected during the conduct of the research secret. The anonymity of study participants needs to be protected from the accidental disclosure of confidentiality through the process of anonymization, by the use of pseudonyms to research participants. Thus, before consenting to participate, participants were informed about how a researcher will manage the issues of confidentiality and anonymity.

In conclusion, the above-identified ethical issues were approved by IT DPRC. As a result, for each client and vendor, a two-page research project information statements that contain the core ethical issues and the ways for managing such issues were prepared (see Appendix 4.2d) and provided to research participants while inviting them to participate in this research project.

4.4. Summary

This study was informed and guided by the positivist research paradigm. The researcher's ontological, epistemological, axiological, and methodological positions about the chosen paradigm were explicitly provided. The research methodology employed for this study is a mixed-methods research strategy that falls within the sequential transformative type of mixed-methods research design strategy. Furthermore, this study is a quantitative dominant type of mixed-methods research, the qualitative aspect of the study has a more limited role.

In the first qualitative part of the study, semi-structured interviews with 10 project managers of client and vendor organizations were conducted to identify and gain insights about the contextual factors that might influence knowledge transfer and utilization in onshore outsourcing practices in Ethiopia. The qualitative data were analyzed using a thematic analysis technique. To test the

hypotheses, a second study, a quantitative field study was conducted using a survey method. Data from a total of 150 projects comprising of 73 client organizations and 51 vendor firms were collected using a self-administered questionnaire involving client and vendor project managers. SmartPLS 2.0 M3 statistical tool was used to assess reliability and validity (at the measurement model level), and to test the hypothesized relationships (at the structural model level).

The next two chapters covers data preparation prior to quantitative data analysis (Chapter 5) and assessments of reliability and validity of quantitative data and test of the hypothesized relationships (Chapter 6), based on the already outlined research methodology in this chapter.

CHAPTER 5: DATA EXAMINATION AND PREPARATION

5.1. Introduction

The previous chapter discussed the research paradigm and the methodology employed for doing this study. This chapter reports data examination and preparation for the intended quantitative data analysis by stressing the handling of missing data (Section 5.2), calculations of the scores of each item of constructs with general and multiplicative measures (Section 5.3), and computations of the scores of each item of the dyadic level constructs (Section 5.4).

5.2. Handling of Missing Data

Although the statistical software used in the study offers options for dealing with missing data, the handling of missing data was started at the data collection sites. When the researcher received the questionnaire from each respondent's work environment, the questionnaire was then checked for its completeness of answers. In case of a question was found not answered or two responses were given for a question by the respondent, the researcher informed the respondent of the expected action and finally, the completed response was received. Besides, the appropriateness of the data collected from 163 projects was checked for the intended analysis. As a result, the final sample consists of 150 projects involving 73 client organizations and 51 vendor firms, as mentioned in Chapter 4. The data of thirteen (13) projects were not usable for reasons of (1) four responses were from the clients' side but the projects were done by offshore outsourcing deals, (2) three responses were from the client-side only and two responses were from the vendor side, but the study demands a matched-pair data, and (3) four responses were from the clients' side and the vendor was from the public sector and it was not willing to offer data related to the projects.

The quantitative data then coded using Microsoft Excel application software. Two separate Excel files were used to record and store the data, one for clients' side data (seven constructs and 48 items) and the other for vendors' side data (seven constructs and 48 items). A new Excel file was created (from the two separate files) that comprises seven constructs with a total of 48 items, after doing the necessary items' scores calculations from the client-vendor data. The following two sections show the calculations made in obtaining the score of each item of the constructs.

5.3. General and Multiplicative Measures

As mentioned in Section 4.3.2, while the measures of ISDO success and knowledge utilization consist of both general and multiplicative measures, the measures of knowledge transfer contain multiplicative measures. The scores of each item of the constructs were computed as follows.

The measure of ISDO success consists of both general and multiplicative measures (Nelson and Coopriider, 1996; Ko et al., 2005; Pee et al., 2010). Accordingly, four general measures (Items: C/V_SU2, C/V_SU3, C/V_SU4, C/V_SU8) and four multiplicative measures (C/V_SU1, C/V_SU5, C/V_SU6, C/V_SU7) were used to assess ISDO success. A general measure, for example, asks respondents to indicate the timely completion of the project, achievement of project objective, and satisfaction with the overall benefits of ISDO. Thus, the responses of a client (indicated by items with initials letter C) and a vendor (indicated by items with initials letter V) are averaged to obtain the score of each item. For example, ISOS2= $(C_SU2 + V_SU2)/2$. A multiplicative measure, on the other hand, asks each respondent to evaluate separately their satisfaction with the developed information system, the development of a mutually beneficial relationship with the partner, satisfaction of interaction with the partner, and the need for working together with the partner in future projects. Then, these responses are multiplied to obtain the score for each item. For instance, the score of ISOS1 is calculated as $(C_SU1 * V_SU1)$. Similar operationalization of constructs using both general and multiplicative measures has been applied to assess perceived goal interdependence, perceived task interdependence, and perceived reward interdependence (Pee et al., 2010), mutual trust, mutual influence, and shared knowledge (Nelson and Coopriider, 1996), shared understanding, and arduousness of relationship (Ko et al., 2005) between IS and business professionals in prior studies.

As mentioned earlier, knowledge transfer measures contain multiplicative type measures (five items: C/V_KT1, C/V_KT2, C/V_KT3, C/V_KT4, and C/V_KT5). This multiplicative measure is a function of (a) a flow of business knowledge from the client to the vendor, and (b) a flow of technical knowledge from the vendor to the client. Hence, each outsourcing partner was asked to assess separately the knowledge (business/technical) obtained from the other. These responses are then multiplied to obtain the score for each item; for example, $KT1 = C_KT1 * V_KT1$, $KT2 = C_KT2 * V_KT2$.

The scores of knowledge utilization were assessed with two general measures (items: C/V_KU4 and C/V_KU5) and three multiplicative measures (items: C/V_KU1, C/V_KU2 and C/V_KU3). The general type measure asks respondents to indicate the improvements of their IS project management skills and outsourcing relationship management capability by applying the knowledge obtained from each other during the outsourcing relationship. Therefore, the responses of a client and a vendor are averaged to obtain the score of the item (i.e., $KU4 = (C_KU4 + V_KU4)/2$), and $KU5 = (C_KU5 + V_KU5)/2$). The remaining three multiplicative measure scores are calculated as $KU1 = C_KU1 * V_KU1$, $KU2 = C_KU2 * V_KU2$, and $KU3 = C_KU3 * V_KU3$. This multiplicative measure asks respondents to point out the extent to which the knowledge acquired from each other was utilized to increase understanding of the new system functionalities and its application, build innovative IS applications, and improves service delivery.

5.4. Calculations of the Scores Dyadic Level Constructs

This sub-section focuses on calculations of the scores dyadic level constructs namely mutual competence trust, mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent.

There is a lack of formalized methods for measuring and evaluating mutual trust in a dyadic business relationship. In literature, there are many approaches to measure mutual trust. Some of the notable approaches are indirect and direct (Brower et al., 2009; Kim et al., 2018). In the indirect approach, mutual trust is assessed by assessing actual trust from each actor in a dyadic relationship (Kim et al., 2018). This approach doesn't guarantee mutuality is perceived. In the direct approach, on the other hand, perceptions of mutual trust is directly measured by taking the view of one party in a dyadic business relationship about perceived mutual trust between him/her and the other party (Kim et al., 2018). Although the direct measure of perceived mutual trust leads to a better understanding of the effects of mutual trust beyond actual trust levels, it captures only the degree of mutuality or trust congruence (i.e., both parties have high, or low trust in each other) (Brower et al., 2009). In other words, the direct approach of assessing mutual trust has limitations to examine the different types of lack of mutuality. For example, in a Firm1-Firm2 relationship, trust in Firm1 is assessed by Firm2, and trust in Firm2 is assessed by Firm1 and the

different types of lack of mutuality can be low trust in Firm1 and high trust in Firm2 and high trust in Firm1 and low trust in Firm2.

In the context of ISO, Lee et al. (2008) approached mutual trust by independently assessing the actual trust of the client and the vendor related to the effect it has on knowledge sharing. However, their work has no assurance of mutuality is perceived. Brower et al. (2009) note that approaching mutual trust by independently assessing the trust of each party has better results than the unique impact of each party's trust in the other. In the IS group-line customer dyad, Nelson & Coopriider (1996) followed the direct approach and investigated perceived mutual trust between the IS and line groups and its effect on cross-functional shared knowledge. However, Nelson & Coopriider (1996) focused on contrasting high mutual trust with low mutual trust without considering the different types of lack of mutuality.

In a client-consultant dyad, Ko (2014) approached mutual trust by assessing the trust of the client and the consultant separately and then investigated the combined effects of each party's trust towards the other by using the following equation:

$$\textit{"Mutual Trust= Level of Trust * Level of Agreement"} \textit{ (Ko, 2014, p. 545).}$$

According to the author, the level of trust refers to the extent to which both a client and a vendor expressed their trust for each other, and was computed by adding the average of trust measures. The level of agreement, on the other hand, represents the extent to which both parties agree about their trust in each other. The level of agreement score addresses the extent to which the client's trust towards the vendor same or different from the vendor's trust towards the client. Hence, the level of agreement score was calculated as follows:

$$5 - \text{ABS} (\text{AvTc} - \text{AvTv}).$$

Where "5" is the upper bound used to denote a high level of agreement, scale measures adopted by Ko (2014) were based on 1–5 Likert scales. AvTc and AvTv represent the average score of measures of vendor's trust in the client and the average score of measures of client's trust in the vendor respectively. The work of Ko (2014) took the trust of both sides of the partners and different types of lack of mutuality into consideration. Thus, our study was based on Ko's (2014) approach to mutual trust but with some adaptation to fit with the research context.

In the context of this study, mutual competence trust was operationalized as the extent to which a client-vendor dyad's high level of competence trust for each other is in agreement. The client's competence trust towards the vendor was assessed by the client. On the other hand, the vendor's competence trust towards the client was assessed by the vendor. Then, mutual competence trust is calculated as suggested by (Ko 2014):

$$\text{Mutual Competence Trust score} = \text{level of competence trust} * \text{level of agreement}$$

where a higher score indicates greater mutual competence trust or high levels of trust and agreement". While Ko (2014) measured mutual trust scores at a construct level, our work measured mutual competence trust scores at item levels. By doing so, we ensured the linkage and smooth transition from the measurement model to the structural model in the SmartPLS data analysis environment. In other words, items that remained in the structural model were resulting from validity and reliability tests of the measurement model. However, Ko (2014) calculated mutual trust scores at the construct level by designing one item (MT1) where its scores were computed by combining the level of trust and the level of agreement. On the other hand, in this study, the mutual competence trust construct was measured by eight items (C/V_MCTR1 to C/V_MCTR8) by combining the level of trust and the level of agreement at the items level.

Thus, to obtain mutual competence trust scores, we followed three steps. First, the level of competence trust was evaluated. Level of competence trust refers to the extent to which both a client and a vendor expressed their competence trust for each other, and was computed by taking the average of competence trust measure. As an example, three items measuring client's competence trust in a vendor are C_CTR1, C_CTR2, and C_CTR3 with responses value of the first respondent(Client A) as 1, 2, and 6 respectively. Similarly, three items (V_CTR1, V_CTR2, and V_CTR3) measuring vendor's competence trust in client and the value of the responses of the first respondent(Vendor A) as 4, 5, 3 respectively. The level of competence trust is calculated at an item level as shown below.

$$\text{Level of Competence Trust1 (LCTR1)} = \frac{C_CTR1 + V_CTR1}{2}, \frac{1+4}{2} = 2.5$$

$$\text{Level of Competence Trust2 (LCTR2)} = \frac{C_CTR2 + V_CTR2}{2}, \frac{2+5}{2} = 3.5$$

$$\text{Level of Competence Trust3 (LCTR3)} = \frac{C_CTR3 + V_CTR3}{2}, \frac{6+3}{2} = 4.5$$

Thus, the level of Competence Trust for the first response (Client A and Vendor A) contains three items with the scores of LCTR1= 2.5, LCTR2= 3.5, and LCTR3= 4.5.

Second, the calculation of the level of agreement: The level of agreement represents the extent to which both parties agree about their competence trust in each other. The level of agreement score addresses the extent to which Client A's competence trust towards Vendor A is the same or different from Vendor A's competence trust towards Client A. Using the same example above, level of agreement score for Client A and Vendor A's competence trust at an item level is calculated as shown here-in-below.

$$\text{Level of agreement1 (LAG1)} = 7 - \text{ABS (C_CTR1-V_CTR1)}, 7 - \text{ABS (1-4)} = 4$$

$$\text{Level of agreement2 (LAG2)} = 7 - \text{ABS (C_CTR2-V_CTR2)}, 7 - \text{ABS (2-5)} = 4$$

$$\text{Level of agreement3 (LAG3)} = 7 - \text{ABS (C_CTR3-V_CTR3)}, 7 - \text{ABS (6-3)} = 4$$

where “7” is the upper bound used to denote a high level of agreement as scale measures adopted by this study was 1–7 Likert scales (e.g., C_CTR1= V_CTR1 would suggest a distance of zero (C_CTR1-V_CTR1 = 0) indicating a perfect agreement, or a score of “7”).

Therefore, the level of agreement for the first response (Client A and Vendor A) contains three items with the scores of LAG1= 4, LAG2= 4, and LAG3= 4.

Third, Mutual Competence Trust (MCT) at an item level is computed as:

$$\text{MCT1} = \text{Level of competence trust1} * \text{Level of agreement1}, 2.5 * 4 = 10$$

$$\text{MCT2} = \text{Level of competence trust2} * \text{Level of agreement2}, 3.5 * 4 = 14$$

$$\text{MCT3} = \text{Level of competence trust3} * \text{Level of agreement3}, 4.5 * 4 = 18$$

Similarly, the approach used by Ko (2014) for calculating mutual trust scores were followed and adapted for calculating the scores of mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent constructs.

As stated in Chapter 4, mutual disseminative capacity was operationalized as the extent to which a client-vendor dyad's high level of disseminative capacity to transfer the required knowledge for each other is in agreement. The client's disseminative capacity to transfer the required knowledge to the vendor was assessed by the vendor. Similarly, the vendor's disseminative capacity to transfer the required knowledge to the client was assessed by the client. To calculate mutual disseminative capacity scores, level of disseminative capacity, and level of agreement were combined using the following equation:

$$\text{Mutual Disseminative Capacity score} = \text{level of disseminative capacity} * \text{level of agreement}$$

where the level of disseminative capacity refers to the extent to which both a client and a vendor expressed their disseminative capacity to transfer the required knowledge to each other, and was computed by taking the average of the responses of the client and the vendor. For example, three items measuring the client's disseminative capacity are C_DC1, C_DC2, and C_DC3. Similarly, three items (V_DC1, V_DC2, and V_DC3) measuring the vendor's disseminative capacity. The level of disseminative capacity is calculated at an item level as shown below.

$$\text{Level of Disseminative Capacity}_1 (\text{LDC}_1) = \frac{C_DC1 + V_DC1}{2}$$

$$\text{Level of Disseminative Capacity}_2 (\text{LDC}_2) = \frac{C_DC2 + V_DC2}{2}$$

$$\text{Level of Disseminative Capacity}_3 (\text{LDC}_3) = \frac{C_DC3 + V_DC3}{2}$$

Thus, the level of Disseminative Capacity for the first response (e.g., Client A and Vendor A) is as shown above and it contains the three items LDC1, LDC2, and LDC3.

On the other hand, the level of agreement represents the extent to which both parties agree about their disseminative capacity to transfer the required knowledge to each other. The level of agreement score addresses the extent to which the client's disseminative capacity to transfer the required knowledge to the vendor is the same or different from the vendor's disseminative capacity to transfer the required knowledge to the client. Using the same example above, the level of agreement score for Client A and Vendor A's disseminative capacity at an item level is calculated as shown here-in-below.

$$\text{Level of agreement}_1 = 7 - \text{ABS} (C_DC1 - V_DC1)$$

$$\text{Level of agreement}_2 = 7 - \text{ABS} (C_DC2 - V_DC2)$$

$$\text{Level of agreement}_3 = 7 - \text{ABS} (C_DC3 - V_DC3)$$

where “7” is the upper bound used to denote a high level of agreement as scale measures adopted by this study was 1–7 Likert scales (e.g., C_DC1= V_DC1 would suggest a distance of zero (C_DC1-V_DC1 = 0) indicating a perfect agreement, or a score of “7”).

Finally, Mutual Disseminative Capacity (MDC) at an item level is computed as:

$$\text{MDC}_1 = \text{Level of Disseminative Capacity}_1 * \text{Level of agreement}_1$$

$$\text{MDC}_2 = \text{Level of Disseminative Capacity}_2 * \text{Level of agreement}_2$$

$$\text{MDC}_3 = \text{Level of Disseminative Capacity}_3 * \text{Level of agreement}_3$$

Where a higher score indicates a greater mutual disseminative capacity, or high levels of disseminative capacity and agreement.

On the other hand, mutual absorptive capacity was operationalized as the extent to which a client-vendor dyad's high level of absorptive capacity for each other's new external knowledge is in agreement. While the client's absorptive capacity for new external knowledge held by the vendor was assessed by the vendor, the vendor's absorptive capacity for new external knowledge held by the client was assessed by the client. Consequently, to obtain mutual absorptive capacity scores, the level of absorptive capacity and level of agreement were evaluated. The level of absorptive capacity refers to the extent to which both a client and a vendor expressed their absorptive capacity for each other's new external knowledge, and was computed by taking the average of the responses of the client and the vendor. The level of agreement represents the extent to which both parties agree about their absorptive capacity for new external knowledge held by each party. The level of agreement score addresses the extent to which the client's absorptive capacity for the new external knowledge of the vendor is the same or different from the vendor's absorptive capacity for the new external knowledge of the client. To obtain mutual absorptive capacity scores, level of absorptive capacity, and level of agreement were combined using the following equation:

$$\textit{Mutual Absorptive Capacity score} = \textit{level of absorptive capacity} * \textit{level of agreement}$$

where a higher score indicates a greater mutual absorptive capacity or high levels of absorptive capacity and agreement. We followed similar steps of mutual competence trust and mutual disseminative capacity for calculating mutual absorptive capacity score at an item level.

Lastly, mutual learning intent was operationalized as the extent to which a client-vendor dyad's high level of learning intent to learn knowledge and skills from each other is in agreement. The client's learning intent to learn knowledge and skills held by the vendor was assessed by the vendor. Likewise, the vendor's learning intent to learn knowledge and skills held by the client was assessed by the client. To calculate mutual learning intent scores, the level of learning intent and level of agreement were evaluated. The level of learning intent refers to the extent to which both a client and a vendor expressed each other's learning intent to learn knowledge and skills from each other, and was calculated by taking the average of the responses of the client and the vendor. On the other hand, the level of agreement represents the extent to which both parties agree about their learning intent to learn knowledge and skill from each other. The level of

agreement score addresses the extent to which the client's learning intent to learn knowledge and skills from the vendor is the same or different from the vendor's learning intent to learn knowledge and skills from the client. In sum, to obtain mutual learning intent scores, level of learning intent and level of agreement were combined using the following equation:

$$\text{Mutual Learning Intent score} = \text{level of learning intent} * \text{level of agreement}$$

For instance, three items measuring the client's learning intent are C_LI1, C_LI2, and C_LI3. Taking the similar example above, three items (V_LI1, V_LI2, and V_LI3) measuring the vendor's learning intent. The level of learning intent is calculated at an item level as shown below.

$$\text{Level of Learning Intent1 (LLI1)} = \text{C_LI1} + \text{V_LI1} / 2$$

$$\text{Level of Learning Intent2 (LLI2)} = \text{C_LI2} + \text{V_LI2} / 2$$

$$\text{Level of Learning Intent3 (LLI3)} = \text{C_LI3} + \text{V_LI3} / 2$$

Thus, the level of learning intent for the first response (e.g., Client A and Vendor A) is as shown above and it contains the three items LLI1, LLI2, and LLI3.

Using the same example above, the level of agreement score for Client A and Vendor A's learning intent at an item level is calculated as shown here-in-below.

$$\text{Level of agreement1} = 7 - \text{ABS} (\text{C_LI1} - \text{V_LI1})$$

$$\text{Level of agreement2} = 7 - \text{ABS} (\text{C_LI2} - \text{V_LI2})$$

$$\text{Level of agreement3} = 7 - \text{ABS} (\text{C_LI3} - \text{V_LI3})$$

where "7" is the upper bound used to denote a high level of agreement as scale measures adopted by this study was 1–7 Likert scales (e.g., C_LI1= V_LI1 would suggest a distance of zero (C_LI1-V_LI1 = 0) indicating a perfect agreement, or a score of "7").

Hence, mutual learning intent scores are calculated by combining the level of learning intent and level of agreement as shown below.

$$\text{Mutual Learning Intent (MLI1)} = \text{Level of Learning Intent1} * \text{Level of agreement1}$$

$$\text{Mutual Learning Intent (MLI2)} = \text{Level of Learning Intent2} * \text{Level of agreement2}$$

$$\text{Mutual Learning Intent (MLI3)} = \text{Level of Learning Intent3} * \text{Level of agreement3}$$

where a higher score indicates a greater mutual learning intent or high levels of learning intent and agreement.

Following the completion of item score calculations of the constructs, the Excel file that contained the quantitative data was imported to SmartPLS work environment and saved in a format appropriate for this statistical analysis tool. The data then analyzed at two stages using SmartPLS 2.0 M3 statistical software, see Chapter Six).

5.5. Summary

The main aim of this chapter was to check the data for missing values and prepare the data for the conduct of quantitative data analysis by calculating item scores of each construct of the conceptual model of the study. As a result, the responses of a client and a vendor were averaged to obtain the score of each item of constructs with general measures. On the other hand, responses of the client and the vendor were multiplied to obtain the score for each item of constructs with multiplicative measures. Moreover, item scores of the other dyadic level constructs were computed by adapting Ko (2014)'s approach to mutual trust.

The next chapter provides the details of quantitative data analysis with the help of SmartPLS 2.0 M3 statistical analysis tool. The analysis of the data will be done in two steps. The first step involves testing the constructs for sufficient psychometric properties. The second step focuses on testing and providing statistics on the hypothesized relationships among the constructs.

CHAPTER 6: DATA ANALYSIS

6.1. Introduction

In the previous chapter, data examination and preparation for quantitative data analysis were discussed. This chapter deals with quantitative data analysis. Thus, using the Smart-PLS 2.0.M3 (Ringle, 2005) statistical software, the analysis was conducted in two stages. In the first stage (Section 6.2), the measurement model was tested to ensure that the constructs had sufficient psychometric properties (i.e., reliability and validity of the measures). In the second stage (Section 6.3), an assessment of the structural model was done to test and provide statistics on the hypothesized relationships among the constructs.

In our study, mutual competence trust, mutual absorptive capacity, mutual disseminative capacity, mutual learning intent, knowledge transfer, knowledge utilization and ISO success are considered reflective because they are each uni-dimensional and removal of an item does not change the construct's meaning.

6.2. Analysis of Measurement model

Measurement of the validity of the instruments used for this study is the critical first step in PLS analysis as meaningful findings rely on the goodness of measures. The analysis of the measurement model includes convergent validity, internal consistency reliability, and discriminant validity. To evaluate convergent validity, we considered the factor loadings of the indicators (measurement items) on their respective constructs and the average variance extracted (AVE) of each construct. During our initial analysis, the mutual competence trust construct has an AVE value less than the threshold value, i.e., 0.50 or above. Thus, to improve and meet the recommended AVE value, item *MCTR5* was removed from the mutual competence trust construct due to its lower factor loading for this construct. Moreover, the items *MCTR1* and *MDC7* were deleted due to their lower factor loadings (< 0.70) with their respective constructs. As depicted in Table 6.1, the results show that the final factor loadings and AVE, in which loadings are above the recommended cutoff value 0.70 or higher (Hair et al., 2017) and the average variance extracted (AVE) of each construct is 0.61 and higher (with a threshold of 0.50 or higher (Fornell and Larcker, 1981)). Hence, we concluded that the convergent validity of the measures is satisfied.

Internal consistency reliability was assessed using Cronbach's Alpha (CA) and Composite Reliability (CR). Cronbach's alpha assumes that all indicators are equally reliable (Hair et al., 2017). In other words, it assumes that the scores of all items of a construct have the same range and meaning (Urbach and Ahlemann, 2010). However, Cronbach's alpha is being criticized for its lower bound reliability values which underestimate the true internal consistency reliability (Urbach and Ahlemann, 2010). Due to its limitation, researchers recommended employing composite reliability as an alternative measure of internal consistency reliability (Hair et al., 2017). Unlike Cronbach's alpha, composite reliability considers that indicators have different outer loadings (Henseler et al., 2009). As suggested by Hair et al. (2017), composite reliability provides comparatively higher reliability estimates as it overestimates the internal consistency reliability. Therefore, the true reliability estimates usually range between Cronbach's alpha (representing the lower bound) and the composite reliability (representing the upper bound) (Hair et al., 2017). As a result, it is reasonable to consider and report both criteria when analyzing and assessing measures of internal consistency reliability. Consequently, Table 6.1 shows that the composite reliability ranged between 0.84 and 0.93 and Cronbach's Alpha ranged between 0.73 and 0.89 for each construct, exceed the recommended threshold values for assessing internal consistency, values 0.70 or higher (Urbach and Ahlemann, 2010).

Discriminant validity was assessed using three criteria. First, we examined the cross-loadings of the items. Accordingly, each item should have a higher loading on the construct it is intended to measure than its cross-loading on other constructs (Gefen et al., 2000).

However, some items of different constructs have high correlation values in two or more constructs in our initial test. Hence, to improve the discriminant validity, those items that have smaller differences in the factorial crossed loads or those items that present high correlation values in two constructs were identified one by one and removed from the model (Ringle et al., 2014). Table 6.2 shows the cross-loadings of the measures and the constructs used in this study. Second, correlations between two constructs were compared with the square root of the AVE of each construct. As a rule of thumb for claiming measures have strong and adequate discriminant validity, the square root of the AVE of each construct should be greater than its correlation with any other construct in the model. Third, testing the constructs intercorrelation.

Table 6. 1 Factor Loadings, AVE and Reliabilities

Construct	Item	Item Loading	AVE	Cronbach's Alpha	Composite Reliability
ISO Success	ISOS2	0.72	0.76	0.89	0.93
	ISOS6	0.93			
	ISOS7	0.88			
	ISOS8	0.94			
Knowledge Transfer	KT1	0.74	0.64	0.73	0.84
	KT3	0.83			
	KT4	0.84			
Knowledge Utilization	KU1	0.82	0.70	0.78	0.87
	KU2	0.82			
	KU4	0.86			
Mutual Absorptive Capacity	MAC1	0.85	0.67	0.75	0.86
	MAC2	0.83			
	MAC5	0.77			
Mutual Competence Trust	MCTR2	0.80	0.62	0.80	0.87
	MCTR6	0.81			
	MCTR7	0.74			
	MCTR8	0.80			
Mutual Disseminative Capacity	MDC1	0.74	0.61	0.79	0.86
	MDC3	0.74			
	MDC4	0.83			
	MDC8	0.81			
Mutual Learning Intent	MLI1	0.86	0.74	0.82	0.89
	MLI2	0.89			
	MLI7	0.83			

As suggested by MacKenzie et al. (2011) a correlation of less than 0.71 is a necessary condition for ensuring discriminant validity. As shown in Table 6.3, the square root of the AVE for each construct was larger than the correlations between all other constructs, and constructs intercorrelation is less than 0.71. Thus, criteria two and three were also met.

Table 6. 2 Cross-loadings of Items and Constructs

	ISOSUC	KNOWTR	KNOWUT	MUAC	MUCTR	MUDC	MULI
ISOS2	0.72	0.35	0.42	0.40	0.52	0.53	0.38
ISOS6	0.93	0.58	0.66	0.60	0.64	0.63	0.59
ISOS7	0.88	0.47	0.60	0.48	0.60	0.59	0.48
ISOS8	0.94	0.51	0.66	0.57	0.56	0.66	0.55
KT1	0.27	0.74	0.43	0.36	0.20	0.34	0.35
KT3	0.50	0.83	0.52	0.47	0.30	0.64	0.56
KT4	0.52	0.84	0.58	0.57	0.59	0.57	0.44
KU1	0.48	0.50	0.82	0.44	0.36	0.36	0.38
KU2	0.61	0.45	0.82	0.45	0.43	0.38	0.35
KU4	0.60	0.65	0.86	0.53	0.45	0.47	0.48
MAC1	0.48	0.48	0.49	0.85	0.60	0.56	0.53
MAC2	0.48	0.45	0.52	0.83	0.43	0.46	0.54
MAC5	0.51	0.54	0.39	0.77	0.47	0.59	0.46
MCTR2	0.53	0.24	0.31	0.40	0.80	0.47	0.27
MCTR6	0.57	0.45	0.44	0.48	0.81	0.63	0.48
MCTR7	0.55	0.33	0.39	0.51	0.74	0.48	0.41
MCTR8	0.46	0.43	0.40	0.52	0.80	0.42	0.44
MDC1	0.62	0.61	0.40	0.50	0.40	0.74	0.51
MDC3	0.42	0.36	0.35	0.46	0.45	0.74	0.43
MDC4	0.51	0.50	0.31	0.59	0.63	0.83	0.41
MDC8	0.59	0.58	0.47	0.49	0.50	0.81	0.47
MLI1	0.48	0.54	0.47	0.59	0.45	0.54	0.86
MLI2	0.48	0.42	0.41	0.49	0.41	0.43	0.89
MLI7	0.55	0.48	0.36	0.52	0.49	0.52	0.83

Table 6. 3 Construct Correlations and the squared roots of AVEs

	ISOSUC	KNOWTR	KNOWUT	MUAC	MUCTR	MUDC	MULI
ISOSUC	0.87						
KNOWTR	0.56	0.80					
KNOWUT	0.68	0.64	0.83				
MUAC	0.60	0.60	0.57	0.82			
MUCTR	0.67	0.48	0.50	0.61	0.79		
MUDC	0.69	0.67	0.49	0.66	0.64	0.78	
MULI	0.58	0.57	0.49	0.63	0.52	0.59	0.86

N.B: The shaded diagonal elements are the squared roots of the AVE scores

ISOSUC: ISO Success
 KNOWTR: Knowledge Transfer
 KNOWUT: Knowledge Utilization

MUAC: Mutual Absorptive Capacity
 MUCTR: Mutual Competence Trust
 MUDC: Mutual Disseminative Capacity
 MULI: Mutual Learning Intent

6.3. Analysis of the Structural Model

As the test of measurement model was satisfactory, the assessment of the structural model results was followed. This assessment involves examinations of path coefficients, individual R squared values, the relationships among constructs, and the model's predictive capabilities. While testing the structural model, a six-step procedure suggested by Hair et al. (2017) was followed. These include:

Step 1: Collinearity assessment

Step 2: Assessment of coefficients of determination (R^2 Values)

Step 3: Evaluation of the f^2 effect size

Step 4: Assessment of the predictive relevance (Q^2) of the path model

Step 5: Assessment of the effect Size q^2

Step 6: Examination of significance and relevance of path coefficients

Step 1: Collinearity Assessment

The presence of highly correlated independent variables while predicting a given dependent variable produce standard errors and thus reduces the power to detect the significant relationship between the variables (Hair et al., 2017; Hair et al., 2014). Therefore, the assessment of collinearity in the structural model is the first important step. To test the structural model for collinearity, the variance inflation factor (VIF) was checked. Hence, each set of independent (predictor) constructs was separately examined for each subcomponent of the structural model. Specifically, we assessed the following sets of (predictor) constructs for collinearity: (a) Mutual Disseminative Capacity, Mutual Learning Intent, Mutual Competence Trust, and Mutual Absorptive Capacity as predictors of Knowledge Transfer ; (b) Mutual Disseminative Capacity, Mutual Learning Intent, and Mutual Competence Trust as predictors of Mutual Absorptive Capacity ; (c) Knowledge Transfer and Mutual Absorptive Capacity as predictors of Knowledge Utilization ; (d) Knowledge Transfer, Knowledge Utilization and Mutual Absorptive Capacity as predictors of ISO Success. The results show that all VIF values are acceptable, between 1.48 and 3.07, which are below the threshold of 5 (i.e., the Tolerance level of 0.2 or higher) (Hair et al., 2011). In other words, all tolerance values are ranged from 0.33 to 0.68. See Table 6.4 as an example for collinearity checking of knowledge transfer (KNOWTR) and mutual absorptive capacity (MUAC) as predictors of knowledge utilization (KNOWUT).

Table 6. 4 Tolerance and VIF values in SPSS Output

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	8.231	2.895		2.843	.005		
MAC1	.053	.048	.111	1.103	.272	.477	2.096
MAC2	.109	.051	.205	2.147	.034	.532	1.880
1 MAC5	-.030	.042	-.064	-.725	.470	.634	1.576
KT1	.115	.076	.129	1.519	.131	.675	1.481
KT3	.204	.084	.210	2.410	.017	.640	1.561
KT4	.113	.081	.137	1.390	.167	.503	1.990

a. Dependent Variable: KU1

Step 2: Assessment of coefficients of determination (R^2 Values)

In the structural model, path coefficients represent the hypothesized relationships among constructs. On the other hand, the coefficients of determination (R^2 value) represent the amount of variance in the dependent variables explained by all the independent variables linked to it (Ringle et al., 2014; Hair et al., 2017). To assess R^2 , the adequacy of the sample size must be established. The structural path model has a maximum of four independent variables pointing at a dependent construct (Knowledge Transfer). This means a minimum of 41 observations will be needed to achieve a statistical power of 80% for detecting R^2 values of at least 0.25 (with a 5% probability of error) (Hair et al., 2017, p. 48). Therefore, the sample size ($n=150$) in this research can be considered as acceptable. Results of path coefficients and R^2 values are visually shown in Figure 6.1.

The structural model explains 53.5% of the variance in ISO success ($R^2 = 0.535$). In other words, the three latent variables (knowledge transfer, knowledge utilization, and mutual absorptive capacity) explain 53.5% of the variance in IS outsourcing success. Furthermore, it explains 46.7%, 55.6%, and 51 % of the variances in knowledge utilization, mutual absorptive capacity, and knowledge transfer, respectively.

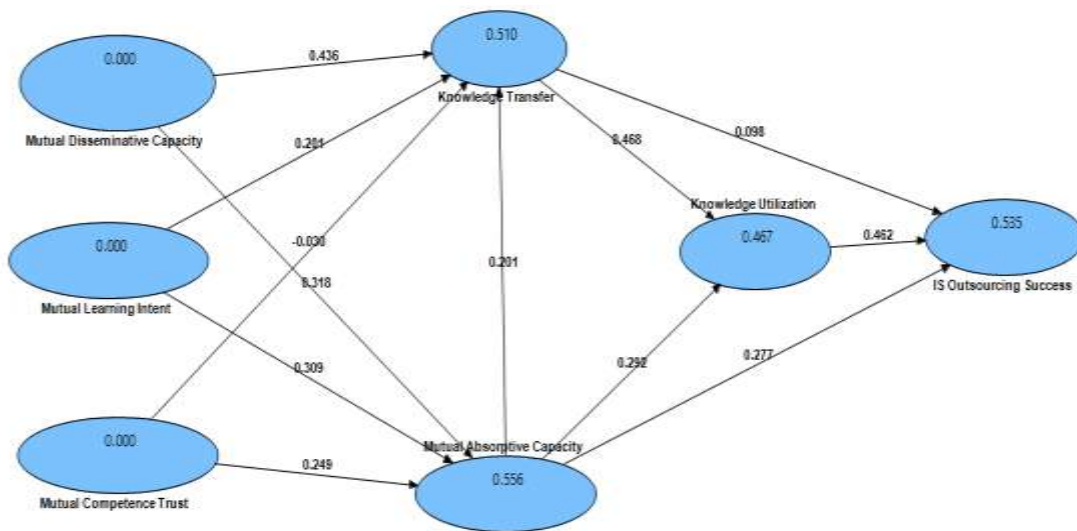


Figure 6. 1 Structural Model Test Results

In general, as a rule of thumb, R^2 values of 0.50, 0.30, or 0.10 for endogenous latent variables can be considered as large, moderate, and weak respectively (Straub et al., 2004). Following the rules of thumb, the R^2 values of knowledge transfer (0.510), ISO success (0.535), and mutual absorptive capacity (0.556) can be considered large, whereas the R^2 value of knowledge utilization (0.467) is rather moderate.

Besides the evaluation of the magnitude of R^2 values for all dependent variables as a criterion of predictive accuracy, assessments of effect size (f^2), predictive relevance (Q^2), and q^2 effect size were done. By interpreting these results, the key predictor constructs with the highest relevance to explain the dependent construct (s) in the structural model can be identified and conclusions will be drawn based on them.

Step 3: Evaluation of the f^2 effect size

Effect size (f^2) is used to assess the impact of a given independent variable when omitted from the model on the dependent variable (Hair et al., 2017). This is done by evaluating the change in the R^2 value after omitting the independent variable. It shows how much the independent variable contributes to the dependent variable R^2 value. In simple terms, effect size assesses the magnitude of strength of the relationship between latent variables. Calculation of f^2 effect size was done manually based on the suggested method by Hair et al. (2017) due to the limitation of SmartPLS 2.0. The guidelines for assessing f^2 effects of the independent variable are that values

of 0.02 (small), 0.15 (medium), and 0.35 (large) (Cohen, 1998). Table 6.5. summarizes the results of the f^2 effect size of exogenous constructs on endogenous constructs in the model.

Table 6. 5 Summary of f^2 effect size of Exogenous constructs on Endogenous Constructs

Relationship		R² included	R² excluded	f²	Effect Size
Knowledge utilization (KNOWUT)	ISOSUC	0.535	0.422	0.24	Medium
Knowledge transfer (KNOWTR)	ISOSUC	0.535	0.530	0.01	<i>No effect</i>
	KNOWUT	0.467	0.324	0.27	Medium
Mutual absorptive capacity (MUAC)	ISOSUC	0.535	0.491	0.09	Small
	KNOWUT	0.467	0.413	0.10	Small
	KNOWTR	0.510	0.493	0.03	Small
Mutual disseminative capacity (MUAC)	KNOWTR	0.510	0.423	0.18	Medium
	MUAC	0.556	0.504	0.12	Small
Mutual learning intent (MULI)	KNOWTR	0.510	0.488	0.04	Small
	MUAC	0.556	0.498	0.13	Small
Mutual competence trust (MUCT)	KNOWTR	0.510	0.509	0.00	<i>No effect</i>
	MUAC	0.556	0.521	0.08	Small

As depicted in the above table, only three exogenous constructs have more than moderate effect sizes. These include knowledge utilization on ISOSUC ($f^2=0.24$), knowledge transfer on knowledge utilization ($f^2=0.27$), and mutual disseminative capacity on knowledge transfer ($f^2=0.18$). These results show that the three exogenous constructs knowledge utilization, knowledge transfer, and mutual disseminative capacity are important in explaining ISO success, knowledge utilization, and knowledge transfer, respectively. The exclusion of these constructs from the model will result in a drastic change in the amount of variance explained (R^2) in each of the three endogenous constructs. The results also show that two exogenous constructs namely knowledge transfer and mutual competence trust do not affect IS outsourcing success and knowledge transfer, respectively. More specifically, knowledge utilization has a medium effect size of 0.24 on ISO success and mutual absorptive capacity has a small effect size of 0.09 on ISO success. These results show that knowledge utilization has greater relevance in explaining ISO success (R^2 value) than mutual absorptive capacity.

However, knowledge transfer does not affect ISO success ($f^2=0.01$). Similarly, knowledge transfer has a medium effect size of 0.27 on knowledge utilization and mutual absorptive capacity has a small effect size of 0.10 on knowledge utilization. These results indicate that knowledge transfer has more contribution in explaining knowledge utilization (R^2 value) than

mutual absorptive capacity's contribution. Related to the f^2 effect sizes of the four exogenous constructs linked to the endogenous construct knowledge transfer, mutual disseminative capacity has a medium effect size of 0.18 on knowledge transfer. The other two constructs mutual learning intent and mutual absorptive capacity have each a small effect size on knowledge transfer 0.04 and 0.03, respectively. This shows that mutual disseminative capacity has the highest relevance in explaining knowledge transfer (R^2 value) followed by mutual learning intent and mutual absorptive capacity. On the contrary, mutual competence trust does not affect knowledge transfer ($f^2=0.00$). In the last relationships of the proposed model, mutual learning intent, mutual disseminative capacity, and mutual competence trust have each a small effect size on mutual absorptive capacity 0.13, 0.12, and 0.08, respectively. Although the f^2 effect size of each of the three constructs is small, mutual learning intent has relatively the greatest relevance in explaining mutual absorptive capacity (R^2 value) followed by mutual disseminative capacity, and mutual competence trust.

To sum up, Hair et al. (2010) suggest that establishing effect size based on the rule of thumb is problematic for a complex research model. In this research, the model tested is complex as measures of some constructs consist of both general and multiplicative measures, and measures other dyadic level constructs are computed mathematically. Therefore, it could be one of the main reasons for having small f^2 effect sizes for most relationships resulting from the assessment.

Step 4: Assessment of the predictive relevance (Q^2) of the path model

Test of predictive relevance (Q^2) deals with examining Stone-Geissr's Q^2 value to determine the path model's predictive relevance for a particular endogenous construct having reflective indicators (Ringle et al., 2014; Hair et al., 2017). In order to assess the predictive relevance (Q^2 value) of the path model, we used a blindfolding procedure. The blindfolding is an iterative process that estimates the data points in the measurement model of the reflective endogenous construct by using the available information in the structural model (Chin, 1998; Henseler et al., 2009; Tenenhaus et al., 2005). This estimation and prediction of a data point depends on the omission distance (D). An omission distance between 5 to 10 is suggested for most research (Ringle, et al., 2012; Hair et al., 2017). In this particular study, an omission distance of 7 ($D=7$) was used to obtain the Q^2 values. This implies that every seventh data point in the endogenous construct's indicators is eliminated and the omitted data point is estimated in a single

blindfolding procedure (Hair et al., 2017). Hence, seven blindfolding rounds are needed to omit and predict every data point of the indicators used in the measurement model of a reflective endogenous latent variable.

After running the blindfolding procedure in the SmartPLS algorithm, Q^2 values of the four endogenous constructs are generated, see Table 6.6. According to Hair et al. (2017), a value of Q^2 bigger than zero for a specific reflective endogenous construct shows the model has predictive relevance.

Table 6. 6 Q^2 Values of the Endogenous Constructs

Construct	Q^2 Value
ISOSUC	0.387
KNOWTR	0.286
KNOWUT	0.299
MUAC	0.349

As shown in Table 6.6, the predictive relevance Q^2 of ISO success (ISOSUC) has a value of 0.387, which indicates that the model has predictive relevance for this construct. All Q^2 values are considerably above zero (i.e., $Q^2 > 0$), thus providing clear support for the model's predictive relevance regarding the four endogenous latent variables.

Step 5: Assessment of the q^2 Effect Size

The measure q^2 effect size allows assessing an independent variable's contribution to a dependent variable's predictive relevance (Q^2 value) (Hair et al., 2017). The q^2 effect size evaluation is done by inspecting the change in the Q^2 value when the independent variable is omitted from the model. Similarly, based on the recommended method by Hair et al. (2017), q^2 effect size was computed manually because the SmartPLS 2.0 software does not provide q^2 values. Results of 0.02, 0.15, and 0.35 are interpreted as small, medium, and large q^2 effect sizes, respectively (Hair et al., 2017).

As illustrated in Table 6.7, knowledge utilization has a medium q^2 effect size of 0.15 on ISO success and mutual absorptive capacity has a small q^2 effect size of 0.08. These results show that knowledge utilization has more predictive relevance for ISO success than mutual absorptive capacity's predictive relevance for ISO success. However, knowledge transfer ($q^2=0.01$) has no predictive relevance for ISO success. As to the endogenous construct knowledge utilization,

knowledge transfer has a q^2 effect size of 0.13 (i.e., small effect) on knowledge utilization and mutual absorptive capacity has an effect size of 0.05 (i.e., small effect) on knowledge utilization.

Table 6. 7 Summary of q^2 effect size of Exogenous Constructs on Endogenous Constructs

Relationship		Q^2 included	Q^2 excluded	q^2	effect size
Knowledge utilization (KNOWUT)	ISOSUC	0.387	0.298	0.15	medium
	KNOWTR	0.387	0.382	0.01	No effect
Mutual absorptive capacity (MUAC)	KNOWUT	0.299	0.211	0.13	Small
	ISOSUC	0.387	0.337	0.08	Small
	KNOWTR	0.286	0.281	0.01	No effect
Mutual disseminative capacity (MUDC)	KNOWTR	0.286	0.225	0.09	Small
	MUAC	0.349	0.318	0.05	Small
Mutual learning intent (MULI)	KNOWTR	0.286	0.281	0.01	No effect
	MUAC	0.349	0.322	0.04	Small
Mutual competence trust (MUCT)	KNOWTR	0.286	0.291	-0.01	No effect
	MUAC	0.349	0.331	0.03	Small

Thus, relatively, knowledge transfer has a better predictive relevance for knowledge utilization than mutual absorptive capacity's predictive relevance for knowledge utilization. The test results also show that mutual disseminative capacity has a small predictive relevance for knowledge transfer ($q^2=0.09$). However, mutual learning intent ($q^2=0.01$) and mutual absorptive capacity ($q^2=0.01$) have each a very small predictive relevance for knowledge transfer. Lastly, mutual disseminative capacity ($q^2=0.05$), mutual learning intent ($q^2=0.04$), and mutual competence trust ($q^2=0.03$) have each a small predictive relevance for mutual absorptive capacity. Relative relevance based on their q^2 effect size, mutual disseminative capacity is most important for mutual absorptive capacity followed by, followed by mutual learning intent and mutual competence trust.

In addition to the assessments of R^2 values, effect size (q^2 and f^2), and predictive relevance (Q^2), the overall measure of model fit test was also done. Therefore, a Goodness-of-fit (GoF) index proposed by Tenenhaus et al. (2005) for PLS-SEM was used to assess the model fit. This GoF is

defined as the geometric mean of the average variance explained (AVE) and average R^2 (for endogenous constructs) (Wetzels et al, 2009). GoF is calculated using the following equation (Tenenhaus et al., 2005; Wetzels et al., 2009),

$$GoF (GoF = \sqrt{AVE * \bar{R}^2}).$$

Wetzels et al. (2009) suggest baseline values for validating the PLS model globally as $GoF_{small}=0.1$, $GoF_{medium}=0.25$, and $GoF_{large}=0.36$. Thus, doing the GoF calculation with the above equation, yielded a GoF index value of 0.59, which indicates a very good (GoF_{large}) model fit (see Table 6.8).

Step 6: Examination of Significance and Relevance of Path Coefficients

To assess the significant relationships in the structural model, we run the bootstrapping procedure with 5000 bootstrap samples. This approach is consistent with recommended practices in prior IS studies for estimating the significance of path coefficients. After running bootstrapping procedures, values of the t-tests of path coefficients were obtained. In this research, t-statistics of at least 1.96 (with a 5% significance level, a two-tailed t-test) were chosen to determine the relationship under consideration is significant. The significance level of 5% and a two-tailed type of test is chosen as it is used in most IS research settings. Results of the structural model analysis are shown in Table 6.9 and Figure 6.2. Most of the proposed hypothesized relationships were supported. Nevertheless, two hypothesized relationships, knowledge transfer -> ISO success ($\beta= 0.10$, t-value= 1.22) and mutual competence trust -> knowledge transfer ($\beta= -0.03$, t-value= 0.33) were not supported. In other words, hypotheses H2 and H11 were not supported.

Table 6. 8 Calculation of Goodness of Fit (GoF) Index

Construct	AVE	R²
IS Outsourcing Success	0.76	0.53
Knowledge Transfer	0.64	0.51
Knowledge Utilization	0.70	0.47
Mutual Absorptive Capacity	0.67	0.56
Mutual Competence Trust	0.62	
Mutual Disseminative Capacity	0.61	
Mutual Learning Intent	0.74	
Average	0.68	0.52
<i>GoF (GoF = $\sqrt{AVE * \bar{R}^2}$)</i>	0.59	

Specifically, both knowledge utilization ($\beta= 0.46$, $t\text{-value}= 7.39$) and mutual absorptive capacity ($\beta= 0.28$, $t\text{-value}= 3.87$) have significant positive effect on ISO success. However, the path from knowledge utilization to ISO success is highly significant. Therefore, H1 and H3 are supported. Similarly, statistically significant supports were found for H4 (knowledge transfer \rightarrow knowledge utilization ($\beta= 0.47$, $t\text{-value}= 6.74$) and H5 (mutual absorptive capacity \rightarrow knowledge utilization ($\beta= 0.29$, $t\text{-value}= 3.74$), which together explain 46.7% of the variance in the knowledge utilization.

The structural model results also show that mutual absorptive capacity ($\beta= 0.2$, $t\text{-value}= 2.21$), mutual disseminative capacity ($\beta= 0.44$, $t\text{-value}= 4.7$), and mutual learning intent ($\beta= 0.2$, $t\text{-value}=1.99$) impact knowledge transfer positively. Hence, H6, H7, and H9 are supported. Mutual Disseminative Capacity has the strongest effect on knowledge transfer, followed by mutual absorptive capacity and mutual learning intent. Statistically significant supports were also found for H8 (mutual disseminative capacity \rightarrow mutual absorptive capacity, $\beta= 0.32$, $t\text{-value}= 5.07$), H10 (mutual learning intent \rightarrow mutual absorptive capacity, $\beta= 0.31$, $t\text{-value}= 4.01$), and H12 (mutual competence trust \rightarrow mutual absorptive capacity, $\beta= 0.25$, $t\text{-value}= 3.18$), which together accounting for 55.6% of the variance in mutual absorptive capacity. In these hypothesized relationships of the proposed research model, mutual disseminative has the strongest effect on mutual absorptive capacity, followed by mutual learning intent and mutual competence trust.

Furthermore, as depicted in Figure 6.2, it is assumed that knowledge utilization might fully mediate in the relationships between knowledge transfer \rightarrow ISDO success and Mutual absorptive Capacity \rightarrow ISDO success. In other words, the relationship between knowledge transfer and ISDO success may also be indirect and can be explained by knowledge transfer \rightarrow knowledge utilization \rightarrow ISDO success sequence. Similarly, the indirect relationship between Mutual absorptive Capacity and ISDO success may be explained by the Mutual absorptive Capacity \rightarrow knowledge utilization \rightarrow ISDO success sequence. In order to know the existence of a mediating effect of knowledge utilization in these relationships, an empirical test was conducted by following a two-step procedure of Preacher and Hayes (2008).

Table 6. 9 Results of the Hypothesis Testing

Hypothesis	Proposed Relationship(Path)	Path Coefficient (β)	T Value	Result
H1	Knowledge Utilization -> IS Outsourcing Success	0.46	7.39	Supported
H2	Knowledge Transfer -> IS Outsourcing Success	0.10	1.22	Not Supported
H3	Mutual Absorptive Capacity -> IS Outsourcing Success	0.28	3.87	Supported
H4	Knowledge Transfer -> Knowledge Utilization	0.47	6.74	Supported
H5	Mutual Absorptive Capacity -> Knowledge Utilization	0.29	3.74	Supported
H6	Mutual Absorptive Capacity -> Knowledge Transfer	0.20	2.21	Supported
H7	Mutual Disseminative Capacity -> Knowledge Transfer	0.44	4.70	Supported
H8	Mutual Disseminative Capacity -> Mutual Absorptive Capacity	0.19	5.07	Supported
H9	Mutual Learning Intent -> Knowledge Transfer	0.20	1.99	Supported
H10	Mutual Learning Intent -> Mutual Absorptive Capacity	0.31	4.01	Supported
H11	Mutual Competence Trust -> Knowledge Transfer	-0.03	0.33	Not Supported
H12	Mutual Competence Trust -> Mutual Absorptive Capacity	0.31	3.18	Supported

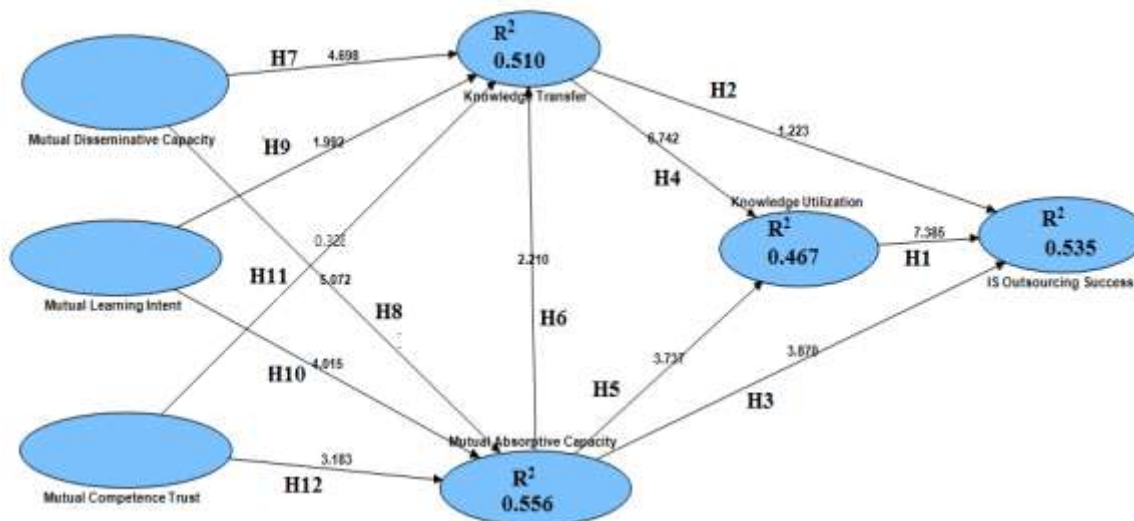


Figure 6. 2 T-statistics of Path Coefficients

Thus, first, the structural model was estimated without the potential mediator variable knowledge utilization (see Table 6.10). The results show that both relationships (knowledge transfer → ISDO success) and (Mutual absorptive Capacity → ISDO success) are significant without the presence of the mediator. As a result, it is assumed that the two relationships are fully mediated by knowledge utilization. Thus, the mediator analysis of these relationships was done as shown in the next sessions.

Table 6. 10 Significance Test of Path Coefficients Without the Mediator

	Path Coefficient	t-value
Knowledge transfer → ISO success	0.317	3.951
Mutual absorptive Capacity → ISO success	0.410	5.522

Second, the mediator variable is included in the model and the test of significance of the indirect effect of knowledge transfer, via the knowledge utilization mediator variable, on ISDO success was conducted. To do this, the following three steps recommended by Hair et al. (2017) and Hair et al. (2014) were followed.

Step 1: Calculate the Indirect Effect of knowledge transfer on ISO Success

The indirect effect of knowledge transfer on ISDO success is in the form of knowledge transfer-> knowledge utilization-> ISDO success sequence. Therefore, the indirect effect is the product of the path coefficients from knowledge transfer -> knowledge utilization (0.47) and knowledge utilization -> ISDO success (0.46), see Table 6.11. This represents the mediating effect of knowledge utilization on the relationship between knowledge transfer and ISDO success. Thus, the indirect effect is 0.2162 (0.47*0.46).

Table 6. 11 Partial Default Report of The Bootstrapping Routine

Relationship	Path Co-efficient(β)	Standard Error	T-Value
Knowledge Transfer -> IS Outsourcing Success	0.1	0.08	1.22
Knowledge Transfer -> Knowledge Utilization	0.47	0.07	6.74
Knowledge Utilization -> IS Outsourcing Success	0.46	0.06	7.39
Mutual Absorptive Capacity -> IS Outsourcing Success	0.28	0.07	3.87
Mutual Absorptive Capacity -> Knowledge Transfer	0.2	0.09	2.21
Mutual Absorptive Capacity -> Knowledge Utilization	0.29	0.08	3.74

Step 2: Test of the statistical significance of the indirect effect

This step deals with testing the significance of the indirect effect that is obtained in step 1. This is by knowing the t-value of the indirect effect. As SmartPLS 2.0.M3 has a limitation to test the significance of the specific indirect effects automatically, the t-values need to be calculated manually. According to Hair et al. (2017), the t-value of the specific indirect effect is obtained by dividing the specific indirect effect by the standard error.

Besides the computed value of the indirect effect resulting from Step 1, we need to know the standard error of the indirect effect to calculate the t-value. This requires running of the bootstrapping procedure of the PLS-SEM algorithm. Table 6.10 summarizes values of path coefficients and the associated standard errors that were obtained from the algorithm's default report. Based on the results provided in Table 6.10, let the:

- path from knowledge transfer -> knowledge utilization is represented by a,
- standard error of a by S_a ,
- path from knowledge utilization -> ISO success is represented by b, and
- the standard error of b by S_b .

Therefore, $a=0.47$, $S_a= 0.07$, $b= 0.46$, $S_b= 0.06$.

Hence, the standard error of the indirect effect (S_{ab}) was calculated using the following formula suggested by MacKinnon et al. (2002):

$$S_{ab} = \sqrt{b^2 S_a^2 + a^2 S_b^2 + S_a^2 S_b^2}$$

$$S_{ab} = \sqrt{(0.46)^2 \cdot (0.07)^2 + (0.47)^2 \cdot (0.06)^2 + (0.07)^2 \cdot (0.06)^2} = 0.0430$$

Thus, $t\text{-value}_{\text{indirect}} = \text{indirect effect}/\text{standard error} = 0.2162/0.0430 = 5.028$.

The empirical t-value of the indirect effect (0.2162) for the knowledge transfer → ISDO success relationship is 5.028, which is statistically significant since the t-value is above the cut off value, 1.96. The established significant indirect effect shows the existence of a mediating effect and the magnitude of the mediator need to be determined.

Step 3: Identify the magnitude of mediation

As the significance of the indirect effect is established in Step 2, the strength of the mediator is examined by using total effect and variance accounted for (VAF) (Hair et al., 2014). The total effect is the sum of the direct effect of knowledge transfer on ISDO success (i.e., 0.317) and the indirect effect of knowledge transfer via knowledge utilization to ISDO success (i.e., 0.216). Hence, the total effect is 0.533, which is calculated as $0.317+0.216=0.533$.

On the other hand, VAF is calculated by dividing the indirect effect by the total effect (Hair et al., 2014). Thus, $VAF=0.216/0.533=0.405$. It can be said that only 40.5% of knowledge transfer's effect on ISDO success can be explained via the knowledge utilization mediator. Since the VAF is larger than 20% threshold level, knowledge utilization is argued to have a partial mediation effect on the knowledge transfer -> ISDO success linkage. According to Hair et al. (2014), partial mediation is demonstrated when the VAF is larger than 20% and less than 80% and that full mediation is demonstrated when the VAF is above 80%.

Similarly, the indirect effect of mutual absorptive capacity on ISDO success was computed based on the above steps used for determining the indirect effect of knowledge transfer on ISDO success. Accordingly, the indirect effect is the product of the path coefficients from mutual absorptive capacity->knowledge utilization (0.29) and knowledge utilization->ISDO success (0.46), which is 0.133, see Table 6.11. In short,

- indirect effect= $0.29*0.46= 0.1334$,
- the calculation of the standard error of the indirect effect gives a value of 0.041.

Thus, $t\text{-value}_{\text{indirect}} = \text{indirect effect}/\text{standard error}$,

$$t\text{-value}_{\text{indirect}} = 0.1334/0.041=3.2537.$$

The empirical t -value of the indirect effect (0.1334) for the mutual absorptive capacity →ISDO success relationship is 3.25, which is statistically significant since the t -value is above the cut off value, 1.96

Once the significance of the indirect effect is ensured, the magnitude of the mediator was examined by using total effect and Variance Account For (VAF). Hence, the total effect of mutual absorptive capacity on ISO success need to be determined. As given in Table 6.10 and above calculation, the direct and indirect effects of mutual absorptive capacity on ISDO success are 0.410 and 0.133, respectively. Thus, the total effect (both direct and indirect) of mutual

absorptive capacity on ISDO success via knowledge utilization is 0.543 (0.410+ 0.133). Then, $VAF = 0.133/0.543 = 0.245$. This shows that 24.5% of mutual absorptive capacity's effect on ISDO success can be explained via the knowledge utilization mediator and its magnitude is considered as partial.

6.4. Summary

In order to ensure meaningful findings, assessment of the validity of the instruments used for this study were conducted before the evaluation of the structural model in the PLS analysis. Hence, convergent validity, internal consistency reliability, and discriminant validity are examined in the measurement model of the PLS analysis. The test results at the end show that factor loadings are above 0.70 and the average variance extracted (AVE) of each construct is above 0.61 (with a threshold of 0.50 or higher (Fornell and Larcker, 1981)). These values indicate that the convergent validity of the measures is satisfied. Furthermore, internal consistency was satisfied as values of composite reliability (above 0.84) and Cronbach's Alpha (above 0.73) exceed the recommended threshold values (above 0.70) (Urbach and Ahlemann, 2010). Evaluation of discriminant validity the measurements were also done and the test suggested adequate discriminant validity.

In the second stage, the assessment of the structural model focuses on examinations of path coefficients, individual R squared values, the relationships among constructs, and the model's predictive capabilities. As shown in Table 6.9, most of the proposed hypothesized relationships were supported. However, two out of twelve hypothesized relationships, knowledge transfer -> ISO success (H2) and mutual competence trust -> knowledge transfer (H11) were not supported. Besides, the mediating role of knowledge utilization was tested. The results show that knowledge utilization partially mediate the relationships between knowledge transfer and ISDO success and mutual absorptive capacity and ISDO success. To sum up, the results of empirical test of the conceptual model will be discussed in detail in the next chapter.

CHAPTER 7: RESEARCH FINDINGS AND DISCUSSION

7.1. Introduction

The purpose of this chapter is to present the main findings of the study. The chapter provides the results of the quantitative data analysis to answer the research questions initially formulated. This study links knowledge-related factors and onshore ISDO success in Ethiopia from the client-vendor perspective. Thus, twelve hypothesized relationships are formulated based on the exploratory study, knowledge-based view, and social exchange theory. Accordingly, Section 7.2 provides a detailed discussion of the major findings of the study and Section 7.3 provides a summary of the chapter.

7.2. Discussion of Research Findings

This section provides a discussion of the findings concerning (1) what the overall model suggests about the contribution of knowledge-related factors to onshore ISDO success; (2) the meditational role of knowledge utilization in the relationships between knowledge transfer and onshore ISO success and mutual absorptive capacity and onshore ISO success; and (3) the key knowledge-related factors influencing onshore ISDO success; and (4) the interrelationships among the identified factors. The findings will be discussed with regarding the three domains of the literature reviewed in Chapters 2: information systems outsourcing, knowledge transfer, and knowledge transfer and information systems outsourcing including those that focus on developing economies.

7.2.1. Knowledge Transfer, Knowledge Utilization, Mutual Absorptive Capacity and Onshore ISDO Success

The current study has proposed a theoretical model based on a nomological net of six key knowledge-related factors to explain onshore ISDO success. In the inner model, knowledge transfer, knowledge utilization, and mutual absorptive capacity were linked with onshore ISDO success. The proposed research model was empirically tested by collecting data through matched-pair questionnaire surveys involving client project managers and vendor project managers engaged in onshore (or domestic) information systems development outsourcing in Ethiopia. As a result, matched-pair data from 150 projects involving 73 client organizations and 51 vendor firms in Ethiopia were used for the empirical test of the research model. Vendors were asked to provide data about business knowledge transfer from their clients, utilization of the

transferred business knowledge, ISDO success, and their trust towards the competence of clients. Furthermore, they were asked about their clients' disseminative capacity, absorptive capacity, and learning intent. Similarly, clients were also asked to provide data about technical knowledge transfer from their vendors, utilization of the transferred technical knowledge, ISDO success, and their trust towards the competence of vendors. In addition, clients were asked about their vendors' disseminative capacity, absorptive capacity, and learning intent.

The research model explains 53.5% and 46.7% of the variances in ISO success and knowledge utilization, respectively. Besides, it explains 55.6% and 51% of the variances in mutual absorptive capacity and knowledge transfer, respectively. These explanatory powers satisfy the criteria set for good models (Straub et al., 2004).

The empirical test results demonstrate that both knowledge utilization and mutual absorptive capacity have significant positive effects on onshore ISDO success. However, knowledge transfer has no significant effect on onshore ISDO success. The descriptive results (see Figure 7.1) show that the knowledge related practices (i.e., disseminative capacity, learning intent, competence trust, absorptive capacity, knowledge transfer, and knowledge utilization) of organizations that engage in onshore ISDO deals in Ethiopia is above the average when the mean values of each item of the constructs is compared with the average, which is 4 as seven-point Likert were used to measure all items (see Chapter 4).

Table 7.1 also depicts that the delivery of the project within the agreed time in the contract (item C_SU2) from the clients' perspective is below the average when its mean value is compared with the average of the seven-point scale used, but this item's value (i.e., item V_SU2) is above the average when seen from the vendors' side. More specifically, the findings show 5.3% of the respondents (clients) strongly agreed with the statement that the delivery of the project within the agreed time in the contract, 24.0% agreed with the statement, 8 % agree somewhat, 23.3% undecided , 10% disagree somewhat, 8% disagree, 21.3% strongly disagree with the statement, see Table 7.2 for summary. This suggests that clients are less comfortable in the timely delivery of the projects as agreed in the contract.

Table 7. 1 Descriptive Statistics for the Client and the vendor

Construct	Item	N	Client		Vendor	
			Mean	Std. Deviation	Mean	Std. Deviation
Competence Trust	C_CTR2/V_CTR2	150	4.77	1.64	4.96	1.47
	C_CTR6/V_CTR6	150	5.33	1.30	5.04	1.27
	C_CTR7/V_CTR7	150	4.94	1.43	4.75	1.49
	C_CTR8/V_CTR8	150	5.11	1.23	5.07	1.32
Disseminative Capacity	C_DC1/V_DC1	150	5.04	1.26	5.30	1.61
	C_DC3/V_DC3	150	5.41	1.34	5.39	1.49
	C_DC4/V_DC4	150	5.24	1.31	5.47	1.46
	C_DC8/V_DC8	150	5.68	1.23	5.79	1.53
Learning Intent	C_LI1/V_LI1	150	5.17	1.49	5.19	1.47
	C_LI2/V_LI2	150	5.05	1.52	5.11	1.45
	C_LI7/V_LI7	150	4.81	1.34	4.91	1.69
Absorptive Capacity	C_AC1/V_AC1	150	5.17	1.39	5.13	1.45
	C_AC2/V_AC2	150	5.39	1.36	5.64	1.24
	C_AC5/V_AC5	150	5.19	1.39	5.36	1.54
Knowledge Transfer	C_KT1/V_KT1	150	5.09	1.63	5.69	1.38
	C_KT3/V_KT3	150	4.81	1.49	6.06	1.14
	C_KT4/V_KT4	150	5.17	1.53	5.26	1.52
Knowledge Utilization	C_KU1/V_KU1	150	5.07	1.39	6.03	1.01
	C_KU2/V_KU2	150	5.09	1.42	6.13	0.89
	C_KU4/V_KU4	150	4.89	1.53	6.01	0.90
ISO Success	C_SU2/V_SU2	150	3.82	1.96	4.45	1.75
	C_SU6/V_SU6	150	4.97	1.46	5.65	1.23
	C_SU7/V_SU7	150	4.88	1.61	5.95	1.18
	C_SU8/V_SU8	150	5.15	1.68	5.53	1.45

On the other hand, the remaining items of the ISO success construct including item C_SU6/V_SU6 (satisfaction of partners with their interactions), item C_SU7/V_SU7 (indication of interest to work together in future projects), and item C_SU8/V_SU8 (satisfaction with the overall benefits from outsourcing) are above the average when their mean values are compared with the average of the seven-point scale used.

Table 7. 2 Response on the delivery of the project within the agreed time

	Client		Vendor	
	Frequency	Percent	Frequency	Percent
Strongly disagree	32	21.3	7	4.7
Disagree	12	8.0	23	15.3
Disagree somewhat	15	10.0	20	13.3
Undecided	35	23.3	12	8.0
Agree somewhat	12	8.0	32	21.3
Agree	36	24.0	45	30.0
Strongly agree	8	5.3	11	7.3
Total	150	100.0	150	100.0

The next four subsections discuss the findings of the research hypotheses with respect to knowledge factors that explain onshore ISDO success and the mediating roles of knowledge utilization. More specifically, the hypotheses include (1) *knowledge utilization is positively associated with onshore ISDO success (H1)*; (2) *knowledge transfer has a positive effect on onshore ISDO success (H2)*; (3) *mutual absorptive capacity is positively related to onshore ISDO success (H3)*; and (4) the mediating role of knowledge utilization in the relationships between knowledge transfer and ISO success and mutual absorptive capacity and ISO success.

7.2.1.1. Knowledge Utilization and ISDO Success

As defined earlier, knowledge utilization refers to the extent to which outsourcing partners use the transferred knowledge in order to accomplish outsourcing tasks and improve their internal business activities. As to the linkage between knowledge utilization and ISDO success, the result shows that knowledge utilization is significantly associated with onshore ISDO success ($\beta= 0.46$, $t\text{-value}= 7.39$). This suggests that the utilization of knowledge transferred between outsourcing partners as well as the newly created project-specific knowledge can help achieve ISO success by increasing vendors' understanding of how clients' knowledge can be leveraged in many functional areas of the new system; improving vendors' efficiency in service delivery; increasing clients' understanding of the new system functionalities and its application; improving the efficiency of clients' business operations, and improving IS and/or project management skills of both clients and vendors.

The findings of the current study extends the existing ISO literature in Ethiopia and African countries by empirically demonstrating and explaining how both vendors and clients can maximize onshore ISDO success by mutually enhancing their knowledge management practices.

Although the finding of Teo and Bhattacharjee (2014) shows a positive relationship between clients' knowledge utilization and ITO Success in a one-directional flow of knowledge, the current study focused on knowledge utilization resulting from the bi-directional flow of knowledge (both business and technical) between the client and the vendor organizations and attempted to see the contribution of knowledge utilization for mutual onshore ISDO success that captures the perceptions of both parties, client and vendor. In this study, ISDO success, the dependent variable of this research, refers to the overall mutual organizational benefits obtained from ISO by outsourcing partners. These include delivery of the project within the agreed time in the contract, satisfaction with the outsourcing relationship (including satisfaction with their interactions and wanting to work together in future projects), and overall satisfaction.

On the other hand, the work of Teo and Bhattacharjee (2014) focused on a one-directional flow of knowledge (from the vendor to the client) and its utilization for improving the client firms' ITO performance based on the clients' perspective. In outsourced ISD projects, knowledge is also transferred from clients to vendors, such as client's business domain knowledge and existing systems and IT landscape. In this regard, Kim et al. (2010) argue that ISD tasks demand the utilization of the various types of specialized knowledge possessed by clients and vendors. Therefore, it is important to take into account benefits gained by both parties while determining successful knowledge utilization in the onshore ISDO relationship. According to Schwarz (2014), IS/IT outsourcing success needs to be seen from mutual the benefits attained by those involved parties. Thus, the finding of the current study extends the existing literature on knowledge management and ISO by empirically demonstrating the significant positive effect of knowledge utilization on mutual onshore ISDO success.

7.2.1.2. Knowledge Transfer and ISDO Success

Knowledge transfer was defined as a bi-directional flow of knowledge between a client and a vendor during the conduct of an outsourced ISD project. As to the theorized relationship between knowledge transfer and onshore ISO success, the findings of this study indicated that knowledge transfer has no a direct significant effect on onshore ISO success. This result is inconsistent with

prior research (e.g., Faraji and Abdoluand, 2016; Gurie et al., 2015; Ko, 2014; Moon et al., 2014; Xu and Yao, 2013; Qi and Chau, 2013), which shows that knowledge transfer is a significant determinant of ISO success. One possible explanation for such inconsistent finding is that the mere transfer of knowledge does not necessarily lead to ISO success (Alavi and Leidner, 2001). Rather, outsourcing performance can be improved when the transferred knowledge, as well as the newly created project-specific knowledge, are effectively utilized by outsourcing partners to make decisions and to solve problems arising from ISD activities (Liyanage et al., 2009; Alavi and Leidner, 2001).

7.2.1.3. Mutual Absorptive Capacity (MUAC) and ISDO Success

Mutual absorptive capacity was another predictor variable linked to the dependent variable ISDO success. Mutual absorptive capacity was defined to refer to the extent to which a client-vendor dyad's high level of absorptive capacity for each other's new knowledge is in agreement. Absorptive capacity was also defined to refer to the ability of a knowledge recipient to recognize the value of new knowledge, assimilate, transform and exploit the knowledge to solve the problem or to business ends. The empirical result indicates that mutual absorptive capacity has a significant positive effect on ISDO success ($\beta = 0.28$, $t\text{-value} = 3.87$). This result suggests that mutual absorptive capacity of outsourcing partners can increase the understanding of partners what the outsourced ISD project is trying to address and allow them to quickly identify and grasp the new relevant knowledge from each other for accomplishing project tasks and goals thereby enhances ISO success.

Besides the significant positive effect of mutual absorptive capacity on ISDO success, in Section 7.2.1.1, it is stated that knowledge utilization has a significant positive effect on ISDO success. In terms of the relative importance of the two predictor variables, knowledge utilization has more contribution to predict ISDO success than mutual absorptive capacity's contribution.

Prior studies by Lee (2001) and Kim et al. (2010) have shown the positive association between absorptive capacity and information systems outsourcing success. Nevertheless, these studies were focused on a single-respondent view of such association, client's absorptive capacity, and vendor's absorptive capacity, respectively. Thus, the current study extends previous studies and

the result shows that a dual-respondent view of absorptive capacity (mutual absorptive capacity) has a significant positive effect on mutual ISO success.

7.2.1.4. The Mediating Roles of Knowledge Utilization

This study also empirically tested whether knowledge utilization would fully mediate the relationships between knowledge transfer and ISDO success and mutual absorptive capacity and ISDO success. As a result, the mediation analysis shown that knowledge utilization partially mediates the relationships between knowledge transfer and ISDO success and mutual absorptive capacity and ISDO success. More specifically, only 40.5% of knowledge transfer's effect on ISDO success is explained via the knowledge utilization mediator. On the other hand, 24.5% of mutual absorptive capacity's effect on ISDO success is explained via the knowledge utilization mediator.

7.2.2. Knowledge Transfer, Mutual Absorptive Capacity and Knowledge Utilization

As indicated earlier, the impacts of knowledge transfer and mutual absorptive capacity on knowledge utilization were hypothesized positively. The findings demonstrate that knowledge transfer and mutual absorptive capacity have significant positive effects on knowledge utilization, jointly accounting for 46.7% of the variance in knowledge utilization. Compared to mutual absorptive capacity, knowledge transfer has a stronger positive effect on knowledge utilization. The next sections highlight the findings of each of these hypothesized relationships.

7.2.2.1. Knowledge Transfer and Knowledge Utilization

As hypothesized, knowledge transfer is found to have a significant positive effect on knowledge utilization ($\beta= 0.47$, $t\text{-value}= 6.74$). This shows that a bi-directional flow of knowledge between clients and vendors can enhance the knowledge pool and increase the chances of successful knowledge utilization in onshore ISDO. The findings indicate that knowledge is effectively utilized when the required knowledge transferred (1) from the client to the vendor including business process know-how, organizational structure diagrams, and procedural or business manuals; and (2) from the vendor to the client including newly created project-specific knowledge (requirements/design specifications and data flow diagrams), technology know-how, and technical or user manuals.

Related to the link between knowledge transfer and knowledge utilization, this study's finding is inconsistent with those of Ouakouak and Ouedraogo (2018), who found that knowledge transfer has no direct significant influence on knowledge utilization of employees at the organizational level. Although, the finding of Teo and Bhattacharjee (2014) showed knowledge transfer at the inter-organizational level has a significant positive impact on knowledge utilization, their study focused on the client's perspective of knowledge transfer from vendors (i.e., the existing technical knowledge) and the impact of knowledge utilization on the client firms' ITO performance. On the other hand, the current study is from the client-vendor perspective and it shows that successful knowledge utilization demands the proper transfer of the existing knowledge possessed by both clients and vendors, as well as the newly created project-specific knowledge, which in turn can lead to mutual onshore ISDO success. Thus, this study contributes to ISO literature by emphasizing a bi-directional flow of knowledge and highlighting the importance of transferring the specific knowledge types in the ISO context and its utilization.

7.2.2.2. Mutual Absorptive Capacity and Knowledge Utilization

This study also sought to empirically demonstrate the effect of mutual absorptive capacity on knowledge utilization. The empirical result indicated that mutual absorptive capacity has a significant positive effect on knowledge utilization in the onshore ISDO relationship ($\beta = 0.29$, t -value = 3.74). This result suggests that outsourcing partners can better utilize the transferred knowledge to accomplish outsourcing tasks and improve their internal business activities when they have the capacity to effectively identify the relevant knowledge, recognize the value of each other's new knowledge and to apply that knowledge. Theoretically, the absorptive capacity of the knowledge recipient is a necessary condition for effective utilization of the knowledge received from the knowledge source (e.g. Abrell et al., 2017, Nodari et al., 2013; Yoo et al., 2011). This study is the first empirical finding to show that the mutual absorptive capacity of outsourcing parties is one of the key factors that can lead to the effective utilization of knowledge transferred from the sending dyad.

7.2.3. MUAC, MUDC, MULI, MUCTR and Knowledge Transfer

This section discusses the findings of the four hypotheses regarding the key factors affecting knowledge transfer between outsourcing partners: 1) Hypothesis 6 [*mutual absorptive capacity is positively related to knowledge transfer in onshore ISDO relationship*]; 2) Hypothesis 7 [*mutual*

disseminative capacity positively impacts knowledge transfer in onshore ISDO relationship]; 3) Hypothesis 9 [*mutual learning intent is positively related to knowledge transfer in onshore ISDO relationship*]; and 4) Hypothesis 11 [*mutual competence trust is positively related to knowledge transfer in onshore ISDO relationship*].

As depicted in Figure 6.1 of the structural model test results, the four latent variables, namely mutual absorptive capacity (MUAC), mutual disseminative capacity (MUDC), mutual learning intent (MULI), and mutual competence trust (MUCTR) together explain 51% of the variance in knowledge transfer. Careful consideration of the f^2 effect size (refer Table 6.5), q^2 effect size (refer Table 6.7), and T-values (refer Table 6.9) provide an empirical basis to suggest that mutual disseminative capacity is the most important factor in predicting knowledge transfer in the onshore ISDO relationships, followed by mutual absorptive capacity and mutual learning intent. These results suggest that, in a two-way transfer of knowledge, both client and vendor need to have the disseminative capacity, absorptive capacity, and the intent to learn from each other in order to ensure successful transfer of knowledge during their ISO engagements. Nevertheless, mutual competence trust has no significant effect on knowledge transfer. Below is given the discussion of the findings of each of the hypothesized relationships.

7.2.3.1. Mutual Absorptive Capacity and Knowledge Transfer

The mutual absorptive capacity of outsourcing partners to recognize the value of new knowledge, assimilate, transform and exploit the knowledge to solve the problem or to business ends was hypothesized to have a direct positive effect on knowledge transfer. The empirical test result showed that mutual absorptive capacity promotes knowledge transfer in the onshore ISDO relationship significantly ($\beta = 0.20$, $t\text{-value} = 2.21$). This result suggests that the absorptive capacity of both clients and vendors should be taken into account for the successful transfer of knowledge in the onshore ISDO relationship. According to Mu et al. (2010), achieving a higher outcome from a knowledge transfer task depends on the ability of actors involved in the transfer activities. As a knowledge recipient, the absorptive capacity of vendors facilitates knowledge transfer from clients by allowing them to quickly and effectively identify, understand, and absorb the client's business domain knowledge such as business processes, business rules, policies and procedures, and the business goals and objectives and to propose a satisfactory technical solution to the clients' business problems. Similarly, the absorptive capacity of clients enables them to

effectively acquire and understand knowledge related to the use and technical possibilities of the new system from the vendors. Hence, the result of the study indicated that mutual absorptive capacity is one of the key factors of successful knowledge transfer in the onshore ISDO relationship.

Regarding literature on the association between absorptive capacity and knowledge transfer, many studies suggest that clients' absorptive capacity is positively related to knowledge transfer (e.g., Ko et al., 2005; Xu and Ma, 2008). These findings were mainly based on a single-respondent view (the clients' view) of absorptive capacity in the ISO relationship. In contrast, this study considers absorptive capacity as a requisite capacity needed by both outsourcing partners to ensure the successful transfer of knowledge during outsourced ISD projects. In the dyadic relationship, if one party has the absorptive capacity and the other lacks, knowledge transfer becomes inefficient. Therefore, the finding of the current study is based on a dual-respondent view of absorptive capacity (i.e., mutual absorptive capacity) in onshore ISDO relationship and it confirms that mutual absorptive capacity has a significant positive effect on knowledge transfer.

In conclusion, in the discussions of Section 7.2.1.3 and Section 7.2.2.2 and this particular section, mutual absorptive capacity has significant positive effects on ISDO success, knowledge utilization, and knowledge transfer. By taking f^2 effect size, q^2 effect size, and T-values into account (see Table 6.5, Table 6.7 and Table 6.9), it can be further suggested that mutual absorptive capacity has the most important contribution to onshore ISDO success and then to knowledge utilization and knowledge transfer, respectively. This suggests that outsourcing partners need to pay heed to develop their absorptive capacity to succeed in their ISDO relationship and maximize the benefits of knowledge transfer and knowledge utilization.

7.2.3.2. Mutual Disseminative Capacity and Knowledge Transfer

Mutual disseminative capacity refers to the extent to which a client-vendor dyad's high level of disseminative capacity to transfer the required knowledge for each other is in agreement. Mostly, knowledge related to vendors' technical know-how and skills, as well as clients' requirements and business processes is tacit and embedded in practices (Alanne and Pekkola, 2015). In addition, in reality, even the transfer of explicit knowledge becomes difficult if the knowledge

sender lacks the requisite capacity to explain, codify, and articulate this knowledge (Mu et al., 2010). As a result, the disseminative capacity of both client and vendor is highly essential in order to fully understand, completely articulate, and codify the necessary knowledge to be transferred and effectively transfer it to each other (Tang et al., 2010). Accordingly, mutual disseminative capacity was hypothesized to have a positive influence on knowledge transfer.

The structural model analysis and hypothesis testing result provided empirical support that mutual disseminative capacity has a significant positive impact on knowledge transfer in the onshore ISDO relationship ($\beta = 0.44$, $t\text{-value} = 4.70$). This result suggests that as a knowledge source, mutual disseminative capacity facilitates knowledge transfer between outsourcing partners by enabling them to properly recognize each other's knowledge requirements and determine the relevant knowledge to be transferred, express project concepts clearly both verbally and in written form, and devise appropriate transfer mechanisms such as face-to-face interactions, project meetings, technical training, and demonstrations in order to transfer the relevant knowledge to the recipient.

In the context of ISO, the association between knowledge senders' disseminative capacity and knowledge transfer has received less attention. Prior research attempted to examine the indirect effect of knowledge source's encoding competence on knowledge transfer success (e.g., Ko et al., 2005; Xu and Ma, 2008). However, in the general knowledge transfer literature, the disseminative capacity of knowledge senders is found to be positively associated with knowledge transfer in intra-organizational setting (e.g., Minbaeva; 2007; Mu et al., 2010; Schulze et al., 2014) as well as in inter-organizational context particularly in collaborative product development in the automotive industry (e.g., Oppat, 2008). For example, Mu et al. (2010) conceptually argued that knowledge senders' disseminative capacity facilitates knowledge transfer within an organization by minimizing misunderstanding and duplication of knowledge transfer. However, the current study considers knowledge transfer as a two-way process, not only does the disseminative capacity of vendors affect knowledge transfer, but also the disseminative capacity of the clients affect knowledge transfer. Therefore, this study empirically examined the effect of a dual-respondent view of disseminative capacity (mutual disseminative capacity) on knowledge transfer. Hence, it asserts that mutual disseminative capacity has a positive impact on knowledge transfer in the inter-organizational context more specifically in onshore information systems development outsourcing. In sum, the current finding extends those studies that have argued for

the positive contribution of a single-respondent view of disseminative capacity to knowledge transfer (e.g., Schulze et al., 2014; Mu et al., 2010; Minbaeva; 2007; Oppat, 2008).

7.2.3.3. Mutual Learning Intent and Knowledge Transfer

Mutual learning intent was defined as to refer to the extent to which a client-vendor dyad's high level of learning intent to acquire knowledge from each other is in agreement. In the conceptual model, mutual learning intent was linked to knowledge transfer and a positively hypothesized relationship was formulated between them. The empirical test result showed that mutual learning intent has a significant positive effect on knowledge transfer in the onshore ISDO relationship ($\beta = 0.20$, $t\text{-value} = 1.99$). This suggests that in the onshore ISDO relationship both client and vendor need to have the intent to learn from each other to succeed in their knowledge transfer initiative. The findings indicated that clients' learning intent facilitates knowledge transfer by increasing their interests to learn about technology know-how and ISD process knowledge possessed by the vendors. Similarly, vendors' get motivated to learn more about the clients' development environment (such as the technology platform and business environment) and ISD process knowledge when their learning intent is high. The results also pointed that outsourcing partners having a strong interest to learning view the outsourcing relationship as a learning opportunity (instead of considering it as a way to simply getting the system developed) and they become motivated to learn each other's knowledge they lacked and desired to gain knowledge through this opportunity.

Therefore, mutual learning intent plays an important role in facilitating the transfer of the requisite knowledge by increasing outsourcing partners' active engagement in the transfer process. In this regard, Pee et al. (2010) argue that ISD tasks demand learning specialized knowledge and skills possessed by each outsourcing partner in order to have a clear picture of an information system to be developed or the problem to be addressed by the system.

Apart from recommending the learning opportunities provided by ISO relationships (e.g., Teo and Bhattacharjee, 2014; Su and Mao, 2013; Deng and Mao, 2012), prior research has paid less attention to empirically examine the effect of mutual learning intent on knowledge transfer. However, a positive association between the recipient's learning intent and knowledge transfer was found in general knowledge transfer literature particularly from strategic alliances and

international joint ventures perspectives (e.g., Pérez-Nordtvedt et al., 2008; Khamseh and Jolly, 2008; Hau and Evangelista, 2007). In these studies, an actor plays a single role, either sending or receiving knowledge, during the knowledge transfer process. Moreover, the results were based on a single-respondent view of learning intent. However, the current study is conducted in an ISO setting which is characterized by knowledge asymmetries (Voigt et al., 2007), the business knowledge is mainly owned by the client and the technical knowledge is mainly possessed by the vendor. Moreover, a partner plays dual roles: knowledge sender and knowledge recipient. Hence, through learning, partners can acquire the knowledge and skills they lacked. Therefore, this study's empirical finding is the first to show that mutual learning intent is an important facilitator of successful transfer of knowledge in the context of ISO.

7.2.3.4. Mutual Competence Trust and Knowledge Transfer

Although hypothesized, there was no significant relationship between mutual competence trust and knowledge transfer ($\beta = -0.03$, $t\text{-value} = 0.33$). This result is inconsistent with prior studies that were based on a single-respondent view of trust (e.g., Park et al., 2014; Lee et al., 2008) showing that trust is positively associated with knowledge transfer in ISO relationships. Moreover, this study's result is inconsistent with the literature on a dual-respondent view of individual level competence trust (mutual competence trust) and knowledge transfer in ISO relationship (e.g. Ko, 2014), which shows that mutual competence trust between individuals had a positive effect on knowledge transfer. One possible explanation is that in a culture with individualism like Ethiopia (Hofstede, 2011) (where this study's data were collected), the Ethiopian culture suppresses openness which is reflected by employees being reluctant to participate and cooperate in their workplaces and in projects (Jetu et al., 2011). Such individualistic culture limits project members' open discussions and sharing of ideas and experiences (Wei et al., 2008). Therefore, mutual competence trust as measured by the extent to which a client-vendor dyad's high level of competence trust for each other is in agreement may not show a significant impact on knowledge transfer. Another possible explanation could be the outsourcing relationship is immature, lack of closer interaction and collaboration between outsourcing partners beyond agreeing on the contract. According to Qi and Chau (2013), the existence of sufficient communication is critical for knowledge transfer to take place in inter-organizational exchanges. In their exchange relationship, vendors may have trust in clients and they have the time and resources to communicate with the clients; however, the clients may not

have enough time and resources to communicate with the vendors. Therefore, clients may not display the same level and agreement of trust as displayed by vendors, i.e., mutual competence trust has no significant effect on knowledge transfer.

7.2.4. MUDC, MULI, MUCTR, and Mutual Absorptive Capacity

In the last hypothesized relationships of the conceptual model, three exogenous constructs mutual disseminative capacity (MUDC), mutual learning intent (MULI), and mutual competence trust (MUCTR) were linked to the endogenous construct mutual absorptive capacity. The empirical test results indicated that mutual disseminative capacity, mutual learning intent, and mutual competence trust are positively associated with mutual absorptive capacity; jointly explain 55.6% of the variance in mutual absorptive capacity. By taking f^2 effect size, q^2 effect size, and T-values into consideration, mutual disseminative capacity contributes most to mutual absorptive capacity, followed by mutual learning intent and mutual competence trust.

This Sub-section provides the details of the findings with respect to the three hypotheses: Hypothesis 8 [*Mutual disseminative capacity is positively related to mutual absorptive capacity in onshore ISDO relationship*]; Hypothesis 10 [*Mutual learning intent is positively related to mutual absorptive capacity in onshore ISDO relationship*]; Hypothesis 12 [*Mutual competence trust is positively related to mutual absorptive capacity in onshore ISDO relationship*].

7.2.4.1. Mutual Disseminative Capacity and Mutual Absorptive Capacity

Based on the arguments drawn from KBV and knowledge transfer literature, it was hypothesized that mutual disseminative capacity is positively related to mutual absorptive capacity. The hypothesis testing result shows that mutual disseminative capacity has a significant positive effect on mutual absorptive capacity in the onshore ISDO relationship ($\beta= 0.19$, $t\text{-value}= 5.07$). This suggests that in a bi-directional flow of knowledge, knowledge recipients' absorptive capacity necessitates the mutual disseminative capacity of outsourcing partners for their knowledge to be transferred successfully. In clear terms, the finding suggests that mutual disseminative capacity enhances the mutual absorptive capacity of the dyads by enabling them properly identifying the relevant knowledge to be transferred and effectively articulating and communicating the knowledge in a way that the knowledge recipients can easily understand and put the knowledge into application.

As discussed in Sub-section 7.2.3.2, mutual disseminative capacity has also a significant positive influence on knowledge transfer. The results of the analyses of f^2 effect size, q^2 effect size, and T-values further suggest that mutual disseminative capacity has more relevance to knowledge transfer than the relevance it has to mutual absorptive capacity.

Although the relationship between disseminative capacity and absorptive capacity was rarely studied in the context of an inter-organizational knowledge transfer, using a simulation study method, Mu et al. (2010) and Tang et al. (2010) found that individual knowledge holders' disseminative capacity is important for effective knowledge absorption by members of intra-organization networks. Hence, this study is unique to empirically investigate the positive relationship between mutual disseminative capacity and mutual absorptive capacity in inter-organizational context. Therefore, this study provides one of the first direct tests for the idea that outsourcing partners' mutual disseminative capacity for the knowledge to be transferred is necessary for improving their mutual absorptive capacity and maximizing the benefits of knowledge transfer.

7.2.4.2. Mutual Learning Intent and Mutual Absorptive Capacity

As indicated, mutual learning intent was also hypothesized to have a direct positive effect on mutual absorptive capacity. The test result showed that mutual learning intent has a significant positive effect on mutual absorptive capacity in the onshore ISDO relationship ($\beta= 0.31$, $t\text{-value}= 4.01$). This suggests that effective absorption, assimilation, and utilization of new external knowledge require outsourcing partners' mutual intent to learn from each other. When partners' mutual intent to learn is high, they are encouraged to work together and invest more time and effort to acquire new valuable knowledge and put the knowledge into some actions (Nieminen, 2007).

As shown in Sub-section 7.2.3.3, mutual learning intent has also an important contribution to successful knowledge transfer. When f^2 effect size, q^2 effect size, and T-values results are interpreted, this study further suggests that mutual learning intent has more contribution to mutual absorptive capacity than its contribution to knowledge transfer.

In prior research, the association between mutual learning intent and mutual absorptive capacity was given less attention. Nevertheless, an attempt was made by Nieminen (2007) in the context

of high-technology industries by adopting a case study research strategy and the researcher found that mutual learning intent is crucial for the success of inter-organizational knowledge acquisition. However, the current study empirically tests the relationship between mutual learning intent and mutual absorptive capacity in a dyadic relationship through a quantitative research approach. Accordingly, this study provided original evidence that mutual learning intent has a direct positive effect on the mutual absorptive capacity of outsourcing partners.

7.2.4.3. Mutual Competence Trust and Mutual Absorptive Capacity

Lastly, mutual competence trust was hypothesized to influence mutual absorptive positively. The test results indicated that mutual competence trust has a significant positive effect on mutual absorptive capacity in the onshore ISDO relationship ($\beta= 0.31$, $t\text{-value}= 3.18$). This suggests that in a dyadic relationship, trust in partner's competence to accomplish outsourcing tasks and reliability to carry out its promises can increase the interest of the knowledge recipient and lead to the appreciation of the value of the new external knowledge, absorption of the knowledge, and utilization of that knowledge.

Through empirically testing the relationships between mutual competence trust and mutual absorptive capacity, the current study also provided original evidence that mutual competence trust has a direct positive effect on the mutual absorptive capacity of outsourcing partners. As such, the current study's empirical finding extends a prior case study's finding of Nieminen (2007) that shows the presence of mutual trust is crucial for the success of inter-organizational knowledge acquisition.

7.3. Summary

This research is an empirical study of the contribution of knowledge factors to onshore ISDO success in Ethiopia and the key knowledge-related factors influencing onshore ISDO success. This specific chapter is intended to discuss how the study's key findings answer the research questions that were initially constructed. In general, most of the hypotheses proposed in the research model are supported, ten out of twelve hypothesized relationships were found to be significant. The proposed research model explains 53.5%, 46.7%, 55.6%, and 51 % of the variances in ISO success, knowledge utilization, mutual absorptive capacity, and knowledge transfer, respectively. Based on the R^2 values, the model's explanatory power was checked and it

satisfied the criteria set for good models. Once the model's explanatory power was satisfied, the findings of each of the hypothesized relationships of the model were discussed based on the hypothesis test results. Additionally, the results of f^2 effect size and q^2 effect size were interpreted to determine the key predictor constructs with the highest relevance to explain the dependent construct (s) in the structural model and to draw conclusions based on these findings.

The empirical test results demonstrate that both knowledge utilization and mutual absorptive capacity have significant positive effects on onshore ISDO success. In terms of their relative importance, knowledge utilization has more relevance to explain onshore ISDO success. On the other hand, knowledge transfer has no significant effect on onshore ISDO success. In addition, the mediation analysis result shown that knowledge utilization partially mediates the relationships between knowledge transfer and ISDO success and mutual absorptive capacity and ISDO success.

The findings further demonstrated that knowledge transfer and mutual absorptive capacity have significant positive effects on knowledge utilization. Relatively, knowledge transfer has more relevance to predict knowledge utilization than mutual absorptive capacity's relevance. The structural model test results also indicated that mutual absorptive capacity, mutual disseminative capacity, and mutual learning intent have significant positive effects on knowledge transfer. Out of the three predictor constructs, disseminative capacity is the most important factor in facilitating knowledge transfer in the onshore ISDO relationships, followed by mutual absorptive capacity and mutual learning intent. However, mutual competence trust has no significant effect on knowledge transfer.

The results of the last hypothesized relationships of the model indicated that mutual disseminative capacity, mutual learning intent, and mutual competence trust are positively associated with mutual absorptive capacity. In these significant relationships, mutual disseminative capacity contributes most to mutual absorptive capacity, followed by mutual learning intent and mutual competence trust. The analyses of effect sizes and t-values further suggested that: 1) mutual absorptive capacity contributes most to onshore ISDO success and then to knowledge utilization and knowledge transfer, respectively; 2) mutual disseminative capacity has more relevance to predict knowledge transfer than the relevance it has to mutual absorptive

capacity; and 3) mutual learning intent has more contribution to predicting mutual absorptive capacity than its contribution to knowledge transfer.

Finally, the findings of this study also provided further evidence that KBV and SET theories to provide important insights to examine the effect of knowledge transfer and utilization on onshore ISDO success and the key knowledge-related factors in explaining onshore ISDO success in Ethiopia. The next chapter will present the theoretical as well as the managerial implications of the core findings of this research and outline its limitations and make recommendations for future research.

CHAPTER 8: CONCLUSION

8.1. Introduction

The purpose of this final chapter is to provide a summary of the key findings of the thesis by revisiting the research questions and the conceptual model. The chapter also outlines the contributions, limitations of this research, and areas for further research, along with final concluding remarks. The remaining part of the chapter is organized into five other sections. Section 8.2 revisits the main research question and the three sub-questions formulated in Chapter 1 and provides a summary of the steps followed to answer those questions with respect to the suggestions made from the research findings. The discussion continues with a brief outline of the main theoretical and practical contributions of this study (Section 8.3). The limitations of the study and the suggested avenues for future research are described in Section 8.4 and Section 8.5, respectively. The chapter is summed up with concluding remarks in Section 8.6.

8.2. Revisiting the Research Questions

The premise of this research is based on the fact that ISO success needs to be seen from a knowledge management perspective owing to the increased organizational dependence on IS, the knowledge-intensive nature of ISD, and the continued failure reports of ISO projects. Prior research has attempted to address ISO failures by linking with knowledge-related factors. However, previous studies have focused on examining antecedents and effects of knowledge-related factors on ISO success from either the clients' or vendors' perspective (e.g., Faraji and Abdoluand, 2016; Teo and Bhattacharjee, 2014; Qi and Chau, 2013; Xu and Yao, 2013; Deng and Mao, 2012; Williams, 2011), but not both. In addition, most of these studies were conducted from the context of developed economies (Teo and Bhattacharjee, 2014; Williams, 2011) while a few research is devoted to developing economies (e.g., Deng and Mao, 2012; Al-Salti, 2011, Hamid and Salim, 2011). Of these studies, some have been based on in-depth case studies, and the generalisability of the findings to another context was not tested so far. While others were from offshore ISO context, empirical research regarding how to enhance onshore ISDO success from knowledge-related practices within the context of in a developing economy has received less attention.

As ISO project failures are frequently reported, there was a need to address the problem by (a) examining onshore ISDO success from *knowledge-related practices* in Ethiopia from the client-vendor perspective; (b) testing the proposed conceptual model that intended to analyze and evaluate the contribution of *knowledge-related factors to onshore ISDO success* and the key knowledge-related factors affecting onshore ISDO success; (c) *empirically testing interrelationships among the identified factors*; and d) expanding the theoretical and empirical base of developing economy ISO studies and build explanations of what might influence effective transfer and utilization of knowledge in onshore ISDO relationship.

To explore whether knowledge factors contribute to onshore ISDO success and provide explanations of how this happens, this study constructs the following as its main research question: '*How do knowledge-related factors contribute to onshore ISDO success?*' To understand the extent to which knowledge factors have improved onshore ISDO success and determine the key knowledge-related factors that contribute to the success of onshore ISDO, the main research question was further decomposed into the following three sub-research questions: '*What are the key knowledge-related factors influencing onshore ISDO success? 'How are these factors interrelated?'*' and '*To what extent do these factors contribute to onshore ISDO success?*' This section provides a summary of how these questions were addressed in this study.

8.2.1. How do knowledge-related factors contribute to onshore ISDO success?

While there exist many studies on the relationship between knowledge factors and offshore ISO success in the developed economies, the impact of knowledge factors on onshore ISDO success in developing economies in general and Ethiopia, in particular, is under-researched (see Chapter 2: Sections 2.9.3-2.9.4). Of those that do exist, the focus is typically on conceptual framework development, a one-directional flow of knowledge (mostly from the vendor to the client), and the impact of such transferred knowledge on ISO success from either the perception of clients or the vendors. Certainly, there has been a lack of research that evaluates the effect of knowledge-related factors on onshore ISDO success that captures both client and vendor views to evaluate mutual success by using a sound theoretical lens. To fill this gap, the main research question of this study was: '*How do knowledge-related factors contribute to onshore ISDO success?*'

In addressing this research question, first, the literature on ISO was reviewed. The review identified that ISO success is a multi-dimensional construct consisting of strategic, economic, technological, social (e.g., improvement of service quality and user satisfaction) and relational benefits (e.g., creating long-term relationships and satisfaction with the relationship) and overall satisfaction (Schwarz, 2014; Xu and Yao, 2013; Qi, 2012; Goo et al., 2008; Dahlberg and Nyrhinen, 2006; Lee and Kim, 1999). In addition, the review revealed the significance of mutual (rather than one-sided) benefits in the current trends of ISO. As a result, ISO success dimensions need to include the perceptions of both clients and vendors and its success needs to be assessed in terms of achievement of mutual benefits (Schwarz, 2014). Further, the review unveiled different views about the determinants of ISO success, of which the KBV and SET were found to be important for conceptually linking knowledge factors with ISO success (Qi and Chau, 2015; Qi and Chau, 2013; Williams, 2011; Yakhlef, 2009; Juntiwarakij and Trauth, 2009; Han et al., 2008).

Second, the review of knowledge factors and ISO literature presented in Chapter 2 identified the relevant perspectives regarding the determining factors for ISO success. These include knowledge transfer (Lacity et al., 2017; Sudhakar, 2013), knowledge utilization (Teo and Bhattacharjee, 2014), and absorptive capacity (Kim et al., 2010; Lee, 2001). The review of the ISO literature in Chapter 2 further provided important insights in determining mutual ISO success dimensions. Hence, product quality, the achievement of project objectives on time, benefits to the organization (including strategic, economic, business practice creativity, and social benefits), relationship quality (including user satisfaction, the satisfaction of partners with their interaction, and intention to continue the outsourcing relationship), and overall satisfaction were identified as important dimensions of mutual ISO success.

Third, an exploratory study involving 10 interviews from ten organizations comprising of four vendors and six client organizations (see Section 3.2.2.1) was conducted. The findings of the exploratory study highlighted the importance of mutually enhancing of knowledge-related practices of outsourcing partners to maximize onshore ISDO success. Furthermore, the findings of the exploratory study provided a more thorough understanding of the concept of mutual outsourcing success and its indicators. Accordingly, satisfaction with the developed system, meeting project schedules, achievement of project objectives, derived business values, and satisfaction with the outsourcing relationship were stated as mutual ISO success indicators by

both clients and vendors. All these led to the development of a theoretical framework comprising 12 propositions, linking the key knowledge-related factors influencing onshore ISDO success. The framework was empirically tested using matched-pair data from 150 projects involving 73 client organizations and 51 vendor firms in Ethiopia and the findings showed that knowledge factors could influence onshore ISDO success in many ways.

Overall, based on the literature review and findings of the exploratory and the quantitative studies, and it can be concluded that outsourcing partners in a developing economy can increase the success of onshore ISDO projects in the following ways:

- 1) enhancing the utilization of the knowledge transferred between vendors and clients as well as the newly created project-specific knowledge. Effective knowledge utilization can increase the chance of onshore ISDO success by increasing vendors' understanding of how clients' knowledge can be leveraged in many functional areas of the new system; improving vendors' efficiency in service delivery; increasing clients' understanding of the new system functionalities and its application; improving the efficiency of clients' business operations, and improving IS and/or project management skills of both clients and vendors;
- 2) developing the absorptive capacity of both clients and vendors. The mutual absorptive capacity of outsourcing partners can improve onshore ISDO success by increasing the understanding of partners what the outsourced ISD project is trying to address and allowing them to quickly identify and grasp the new relevant knowledge from each other for accomplishing project tasks and goals.
- 3) transferring the requisite knowledge effectively between the clients and vendors to facilitate the utilization in ISDO projects. Successfully transferring the requisite knowledge between clients and vendors can increase the amount of knowledge transferred and facilitate effective knowledge utilization. Thus, the client's business knowledge such as business processes, business rules, policies and procedures, and the business goals and objectives should be transferred to vendors. Furthermore, the technical knowledge about how to use and secure the newly developed information system and its technical possibilities should be transferred to clients from vendors. Therefore, a bi-directional flow of knowledge between a client and a vendor increases the knowledge pool and its effective utilization can lead to the success of onshore ISDO in the

developing economy, Ethiopia. The next sections provide the details on how the knowledge factors influence onshore ISDO success.

8.2.2. What are the key knowledge-related factors influencing onshore ISDO success?

Attempts were made by previous studies to investigate the knowledge factors affecting ISO success (see Chapter 2). Nevertheless, these studies have focused on either the clients' or the vendors' perspective, but not both. Moreover, most studies are conducted from the context of developed economies while little research is done in the context of developing economies in general and Ethiopia in particular. Hence, the sub-research question, '*What are the key knowledge-related factors influencing onshore ISDO success?*' was formulated.

In addressing this sub-question, knowledge transfer and ISO literature were reviewed. Besides, important insights gained from different theories employed by prior empirical studies (see Section 2.9.3 and Section 2.9.4). As a result, four main categories of factors that might affect both clients and vendors to achieve successful knowledge transfer during their ISDO relationships were identified. These are knowledge-related (knowledge tacitness and knowledge complexity), relationships-related (trust), source-related (perceived value of knowledge), and recipient-related (learning intent and absorptive capacity) (Deng and Mao, 2012; Al-Salti et al., 2010). Based on these identified factors, the initial conceptual framework comprising of nine theoretical constructs was framed (see Figure 2.2). Three of the seven constructs are newly constructed: mutual perceived value of knowledge, mutual absorptive capacity, and mutual learning intent. Thus, an exploratory study was conducted to examine the influence of these factors in the outsourcing practices of Ethiopian organizations and to better understand and conceptualize these constructs (see Chapter 3).

By taking the views of both clients and vendors, the findings of the exploratory study also lead to the identification of the key knowledge factors affecting onshore ISDO success with in the context of Ethiopia. The analysis of the qualitative data led to the addition and deletion of influencing factors were made on/from the preliminary conceptual framework (see Chapter 2, fig. 2.2 and Chapter 3, fig. 3.1). Therefore, mutual disseminative capacity was a newly emerged factor affecting knowledge transfer between outsourcing partners. Thus, it was added in the revised conceptual research model (see Section 3.4). As suggested in the literature, trust is a multidimensional construct having benevolence trust and competence trust dimensions

(McAllister, 1995). However, the competence trust dimension was supported by the qualitative data obtained from the exploratory study as a factor affecting knowledge transfer in the ISO context of Ethiopia. On the other hand, perceived value of knowledge, knowledge complexity, and knowledge tacitness were dropped from the preliminary conceptual model (see Figure 2.2) due to the lack of enough supporting data.

Besides the review of literature and the findings of the exploratory study, a knowledge-based view and social exchange theory were used to gain a deeper understanding of the constructs and formulating the hypotheses. Thus, the quantitative study (i.e., the second phase of the study) was conducted to empirically test the impacts of those identified key factors on onshore ISDO success in Ethiopia.

The empirical findings indicated that two categories of knowledge factors influence onshore ISDO success, direct and indirect. Those factors that have a direct influence on onshore ISDO success include knowledge utilization and mutual absorptive capacity. In brief, both knowledge utilization and mutual absorptive capacity have significant positive effects on onshore ISDO success. In terms of their relative importance, knowledge utilization has more relevance than the mutual absorptive capacity factor to explain onshore ISDO success. On the other hand, knowledge transfer has no significant direct effect on onshore ISDO success, but its effect is mediated through knowledge utilization. On the other hand, three factors namely mutual disseminative capacity, mutual learning intent, and mutual competence trust have indirect influences on onshore ISDO success.

8.2.3. How are these factors interrelated?

The insight obtained from review of literature indicates that successful transfer and utilization of knowledge in ISO context is complex and challenging for many reasons. Besides the contribution of knowledge factors to ISO success, the results from the exploratory study (Chapter 3) and the theories employed (KBV and SET) for the current study showed the linkages among the identified factors (see see Figure 3.1). Thus, this specific research question, *'How are these factors interrelated?'*

This specific research question was addressed by the empirically test of quantitative data as mentioned in Sub-section 8.2.1 above and Chapter 4. Therefore, the findings revealed, first, knowledge utilization is influenced by knowledge transfer and mutual absorptive capacity.

Compared to mutual absorptive capacity, knowledge transfer has a stronger positive effect on knowledge utilization. Second, mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent are the key common factors influencing knowledge transfer in onshore ISDO relationships. Relatively, mutual disseminative capacity is the most important factor in facilitating knowledge transfer in the onshore ISDO relationships, followed by mutual absorptive capacity and mutual learning intent. However, mutual competence trust has no significant influence on knowledge transfer.

Third, the mutual absorptive capacity of outsourcing partners is influenced by mutual disseminative capacity, mutual learning intent, and mutual competence trust. Mutual disseminative capacity contributes most to mutual absorptive capacity, followed by mutual learning intent and mutual competence trust.

Fourth, further analyses suggested that: (I) mutual absorptive capacity contributes most to onshore ISDO success and then to knowledge utilization and knowledge transfer, respectively; (II) mutual disseminative capacity has more relevance to predict knowledge transfer than the relevance it has to mutual absorptive capacity; and (III) mutual learning intent has more contribution to predicting mutual absorptive capacity than its contribution to knowledge transfer.

8.2.4. To what extent do these knowledge factors contribute to onshore ISDO success?

In order to address this specific question, the constructs that constitute the research framework were identified and defined. These include knowledge transfer, knowledge utilization, mutual absorptive capacity, mutual disseminative capacity, mutual learning intent, mutual competence trust, and ISDO success. Five steps were carried out to generate and evaluate the measurement items to operationalize each construct (see Section 4.3.1). After providing the conceptual definition of each construct, an initial pool of items that represent the conceptual domain of the construct were generated from the review of existing theoretical and empirical literature, and important insights gained from the exploratory study. Based on the selected and adapted measurement instruments from the initial pool of items, a draft questionnaire was created. Then, the draft questionnaire was made to be evaluated by three experienced academic staff and four project managers to ensure a content-valid instrument. To further strengthen the content validity of the draft survey instruments, the questionnaire was pilot tested and further improved following

the feedback from the pilot test. To test the proposed conceptual model, matched-pair data were collected from 150 projects involving 73 client organizations and 51 vendor firms in Ethiopia.

The collected data were checked for missing data and prepared for the intended quantitative data analysis (see Chapter 5). The analysis was conducted at two stages (see Chapter 6). In the first stage, the measurement model was tested to ensure that the constructs had sufficient psychometric properties. In the second stage, the structural model was assessed using a six-step procedure (see Section 6.3) to test and provide statistics on the hypothesized relationships among the constructs. The model's explanatory power was checked and it satisfied the criteria set for good models. In addition, the calculated GoF index value (see Table 6.8) indicated the structural model fitted the data reasonably. The results of the hypothesis test provided support for most of the research hypotheses, ten out of twelve hypothesized relationships were found to be significant.

The research model explained 53.5 percent of the variance explained in onshore ISDO success. In other words, three independent constructs, namely knowledge transfer, knowledge utilization, and mutual absorptive capacity jointly explain 53.5% of the variance in ISDO success (see Chapter 6). The R^2 value of ISO success (0.535) can be considered large based on the rules of thumb (Straub et al., 2004). Based on the findings of the study, the knowledge related practices of organizations that engage in onshore ISDO deals in Ethiopia is above the average. According to Petter et al. (2012), the success of a given information system can be measured differently as its stakeholders (such as managers, developers, IS staff and users) have different perspectives on success. Therefore, a different result might be obtained when the ISO success is evaluated by actors other than the project managers.

Thus, the answer for the specific research question ‘*To what extent do these factors contribute to onshore ISDO success?*’ is to a large extent, since the overall variance explained is above 0.50 (Straub et al., 2004). The findings of this study suggest that outsourcing organizations engaged in onshore ISDO in developing economies can maximize onshore ISDO success by mutually enhancing knowledge-related practices.

8.3. Contributions of the Study

Drawing on theoretical perspectives from the exploratory study and the KBV and SET theories, this study develops and tests a knowledge-based dyadic onshore ISDO success model in a developing economy context in general and Ethiopia in particular. This study has contributions

to theory, methodology, and practice with some limitations that must be considered while generalizing the study's results. This sub-section highlights these contributions and limitations of this study.

8.3.1. Contributions to Research and Theory

The results of the study have at least four main important contributions to research and theory. First, this study provides important contributions and original insights to the emerging information systems literature in Ethiopia, which has sought to maximize onshore ISDO success from a knowledge-based perspective. As noted in Section 2.10, there is a lack of research offering a holistic and detailed examination and analysis of the key dyadic level knowledge factors impacting ISDO success. Thus, the study's major theoretical contribution is that the development of a novel, comprehensive knowledge-based dyadic onshore ISDO success conceptual model, as proposed in Figure 3.1. The model was empirically validated using matched-pair data from 150 projects involving 73 client organizations and 51 vendor firms in Ethiopia. The study provides a complete picture of the knowledge factors impacting onshore ISDO success as it considers both the knowledge source and the knowledge recipient simultaneously. By shedding light on a two-way knowledge transfer process, the findings of this research show that not only does the mutual disseminative capacity of the knowledge sources (client and vendor) facilitates knowledge transfer, but also mutual absorptive capacity and mutual learning intent of the knowledge recipients (client and vendor) facilitate knowledge transfer in onshore ISDO relationship. Moreover, the study offers better understandings of what determines successful knowledge utilization and how knowledge is effectively utilized in onshore ISDO arrangements. Therefore, this study is particularly important in providing a comprehensive understanding of the key knowledge-related factors that commonly affect both clients and vendors to successfully transfer, receive, and utilize knowledge during their onshore ISDO undertakings.

Second, the findings of the current study contribute to the ISDO literature in Africa by introducing the concept of mutuality of ISDO success and knowledge-related capabilities and emphasizing the importance of mutual absorptive capacity, mutual absorptive capacity, mutual learning intent, mutual competence trust, knowledge transfer, and knowledge utilization in successful onshore ISDO relationship. As noted in Section 2.8.4, little research is conducted to

examine the effect of knowledge-related factors on ISDO success in the context of Ethiopia in particular and African countries in general. In addition, as mentioned in Section 1.5, Ethiopia is placed within the ‘developing economies’ category and the data of this study were collected from Ethiopia while addressing the research questions. Hence, this study has a unique contribution to the ISDO literature in Africa as well by providing empirical evidence about how onshore ISDO success is maximized by mutually enhancing both clients' and vendors' knowledge-related practices.

Third, in general, this study can contribute to ISDO literature as it thoroughly demonstrated how mutual ISDO success can be modeled and investigated. Hence, other researchers can take the theory resulting from this study and test it in other settings. To this end, the study proposes and empirically tests a knowledge-based dyadic onshore ISDO success conceptual model using matched-pair data collected from 150 projects involving 73 client organizations and 51 vendor firms in Ethiopia. The research model explains 53.5% and 46.7% of the variances in ISO success and knowledge utilization, respectively. Besides, it explains 55.6% and 51% of the variances in mutual absorptive capacity and knowledge transfer, respectively. These explanatory powers satisfy the criteria set for good models (Straub et al., 2004).

Unlike prior IS studies that examined determinants of ISO success either from the client or the vendor perspective, this study demonstrates that knowledge utilization and mutual absorptive capacity are the key determinants of mutual onshore ISDO success from the client-vendor perspective. Compared to mutual absorptive capacity, knowledge utilization has greater relevance to mutual onshore ISDO success. By shedding light on the mutual benefits of ISO, this study also suggests that knowledge transfer must be a bi-directional and effective utilization of transferred knowledge that leads to mutual benefits of outsourcing partners. As a result, the current study is from the client-vendor perspective and it shows that a bi-directional flow of knowledge between clients and vendors can increase the chance of successful knowledge utilization in onshore ISDO by increasing the amount of knowledge transferred. Moreover, this study is the first to empirically show that outsourcing partners can better utilize the transferred knowledge to accomplish outsourcing tasks and improve their internal business activities when they both have the absorptive capacity to effectively identify the relevant knowledge, recognize the value of each other's new knowledge and to apply that knowledge. Relative to mutual absorptive capacity, knowledge transfer has a more predictive relevance to knowledge

utilization. This study also suggests knowledge utilization as a mediator in the relationships between knowledge transfer and ISO success and mutual absorptive capacity and ISO success.

Furthermore, the study highlights that mutual disseminative capacity is the most important factor in predicting knowledge transfer in the onshore ISDO relationships, followed by mutual absorptive capacity and mutual learning intent. Another important suggestion of this study is that outsourcing partners' mutual disseminative capacity for the knowledge to be transferred contributes most to the mutual absorptive capacity of partners by enabling them properly identifying the relevant knowledge to be transferred and effectively articulating and communicating the knowledge in a way that the knowledge recipients can easily understand and put the knowledge into application. In addition to mutual disseminative capacity, mutual learning intent and mutual competence trust have relevance to mutual absorptive capacity in onshore ISDO relationships.

Forth, this study extends KB and SET theories in a number of ways. With respect to KBV's contribution, this study extends KBV by providing a better understanding of how mutual onshore ISDO success is enhanced through knowledge utilization and mutual absorptive capacity of outsourcing partners. The study shows how knowledge transfer and mutual absorptive capacity improves knowledge utilization. It also shows how knowledge transfer is facilitated through mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent. Moreover, the study provides additional insights into how the mutual absorptive capacity of knowledge recipients improved through mutual disseminative capacity, mutual competence trust, and mutual learning intent. Equally important, this study extends SET by providing a better understanding of how outsourcing partners achieve mutual benefits by exchanging knowledge resources in their joint ISD activities.

8.3.2. Contributions to Methodology

This study has methodological contribution as it is the first attempt to measure and assess dyadic level constructs including mutual disseminative capacity, mutual absorptive capacity, mutual learning intent, and mutual trust. In the first place, it extends an approach for measuring and assessing mutual trust in a dyadic business relationship. Although earlier research has shown the different methods for measuring and evaluating mutual trust (e.g., Lee et al., 2008; Nelson &

Coopriider, 1996; Brower et al.,2009; Kim et al., 2018), they have limitations to show mutuality in such relationship (see Chapter 5). As pointed out in Chapter 5, Ko (2014) assessed the trust of the client and the consultant and measured mutual trust scores at a construct level (by designing one item, e.g., MT1), by combining the level of trust and the level of agreement of trust.

However, the current study followed three steps to obtain mutual competence trust scores: (1) calculation of the level of competence trust; (2) calculation of the level of agreement; (3) calculation of mutual competence trust scores by combining the level of competence trust and level of agreement of trust. These steps ensured the linkage and smooth transition from the measurement model to the structural model in the SmartPLS data analysis environment. In other words, items that remained in the structural model were resulting from validity and reliability tests of the measurement model. Hence, mutual competence trust is calculated as *Mutual Competence Trust score = level of competence trust * level of agreement* (See Chapter 5 for details). As a result, this study extends the approach of Ko (2014) for measuring and assessing mutual trust.

Second, as explained in Chapter 2 and Chapter 3, this study introduced the new dyadic level constructs namely mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent. Prior studies neither explicitly defined these constructs nor devised instruments and methods to measure and link them with their knowledge transfer theoretical models. As such, IS researchers who are interested in investigating the effects of these constructs on knowledge transfer in their study context can use the approaches employed in Chapter 5 to measure and assess the constructs on their own or with sufficient refinements and improvements.

8.3.3. Contributions to Practice

This study contributes to knowledge management practices in ISO in at least three major ways. First, the study contributes to ISO project success, as it unveils to the ISO practitioners the mechanisms through which viable information systems development outsourcing success can be achieved and the key knowledge factors to be taken into account in their onshore ISDO practices. Understanding these mechanisms and key factors enable practitioners to ensure onshore ISDO success and to reap mutual organizational benefits. Thus, the study recommends for ISO

practitioners who undertake onshore ISDO in a developing economy context can improve success to ensure that:

- a) the knowledge transferred between vendors and clients as well as the newly created project-specific knowledge is successfully utilized. Effective knowledge utilization can increase the chance of onshore ISDO success by increasing vendors' understanding of how clients' knowledge can be leveraged in many functional areas of the new system; improving vendors' efficiency in service delivery; increasing clients' understanding of the new system functionalities and its application; improving the efficiency of clients' business operations, and improving IS and/or project management skills of both clients and vendors.
- b) developing the absorptive capacity of both clients and vendors. The mutual absorptive capacity of outsourcing partners can improve onshore ISDO success by increasing the understanding of partners what the outsourced ISD project is trying to address and allowing them to quickly identify and grasp the new relevant knowledge from each other for accomplishing project tasks and goals.
- c) successfully transferring the requisite knowledge between clients and vendors. This can increase the amount of knowledge transferred and facilitate effective knowledge utilization. Thus, the client's business knowledge such as business process know-how, business rules, policies and procedures, organizational structure diagrams, procedural or business manuals, and the business goals and objectives should be transferred to vendors. Furthermore, the technical knowledge including technical know-how, newly created project-specific knowledge (requirements/design specifications and data flow diagrams), and technical or user manuals about how to use and secure the newly developed information system and its technical possibilities.

From the public sector clients' side, additional emphasis needs to be given to make end-users have the knowledge regarding the know-why of using a new system prior to the transfer of client-specific knowledge to the vendor and the transfer of knowledge about how to use the newly developed information system to the end-users. When end-users are made getting the knowledge of why they use a new system or technology, they can be encouraged to collaborate and express their needs and requirements to the vendor as well as to acquire the knowledge about

how to use the new information system. Moreover, project managers need to devise knowledge retention mechanisms at the project level to overcome the knowledge gap created by project staff turnover. In this regard, both client and vendor project managers should play an active role in the storage and management of project-specific knowledge during the conduct of outsourced ISD projects. For example, making knowledge residing in various components, such as written documentation, electronic databases, documented tacit knowledge acquired from each other.

Second, another important managerial contribution emerging from the study's findings concerns the managerial attention to be given to knowledge factors while planning or engaging in onshore ISDO relationships. Thus, the study's findings provide the relative importance of the knowledge factors in improving onshore ISDO success and their impacts on one another. Thus, both client and vendor project managers seeking to facilitate successful bi-directional knowledge transfer, need to focus on:

- a) developing their mutual disseminative capacity by assessing and recognizing the knowledge requirements of a partner, identifying the significant knowledge to be transferred to each other, and employing proper transfer mechanisms such as face-to-face interactions, project meetings, technical training, and demonstrations for transferring the identified knowledge to each other. A well-developed disseminative capacity of clients enables them to effectively transfer their needs, requirements, business processes, and working procedures to the vendors and to better communicate their ideas and project concepts with the vendors. Similarly, vendors' disseminative capacity allows them to deliver technical training to IT staff and end-users of client organizations.
- b) developing their mutual absorptive capacity to effectively receive new external valuable knowledge from each other and to capitalize on it to get better results. As a knowledge recipient, vendors' absorptive capacity can facilitate knowledge transfer from clients by allowing the vendors to quickly and effectively identify, understand, and absorb the client's business domain knowledge. Likewise, the absorptive capacity of clients enables them to effectively understand, acquire, and apply the new technical knowledge from the vendors. To succeed in developing such capacity, an active role needs to be played by client and vendor project managers to ensure the development of such capacity during the outsourced project undertakings. Planning and conducting regular meetings comprising of client's and

vendor's project teams following the signing of the contract. Before starting the project, clients' project managers should make sure that IS development methods, tools, and techniques to be employed by vendors are briefed to their respective project team members and additional training is demanded in case of the novelty of the methodology. Such types of briefings are good for creating a common understanding between the team, updating the technical knowledge of the client, and facilitating interactions with the vendors' development team. Following the start of the project, the client and vendor project team need to have meetings after the completion of each phase of the project to exchange ideas and learn from each other, and leverage the different ideas, knowledge, and skills for superior performance.

- c) recognizing the value of knowledge and exploiting the learning opportunity created by the outsourcing relationship. In order for the clients and vendors to be able to take advantage of this opportunity, they must have the intent or motivation to learn each other's knowledge they lacked and desired to gain it through this opportunity. Thus, outsourcing partners need to view the outsourcing relationship as a learning opportunity, approach each other with the attitude of a student, create a conducive learning environment and allocate the necessary resources that support learning and acquisition of technical and business knowledge from each other.

Third, project managers also need to understand what facilitates the absorptive capacity of both clients and vendors when each partner plays the role of a knowledge recipient. Thus, it is better to project managers to capitalize on the following knowledge factors to improve their mutual absorptive capacity:

- a) *mutual disseminative capacity*- the development of the mutual disseminative capacity of clients and vendors also plays an important role for the new external knowledge to be absorbed from each other. Mutual disseminative capacity enables them to successfully identify the relevant knowledge to be transferred, effectively articulate, and communicate the knowledge in a way that the knowledge recipients can easily understand and put the knowledge into application.

- b) *mutual learning intent*- outsourcing partners' mutual intent to learn from each other is an important factor for an externally held knowledge to be effectively absorbed, assimilated, and utilized by the knowledge recipient. The existence of mutual intent to learn encourages clients and vendors to work together, spend more time, exert efforts to acquire new valuable knowledge, and apply it to outsourcing tasks.
- c) *mutual competence trust*- trust in another's competence to accomplish outsourcing tasks and reliability to carry out its promises can create a conducive environment for the knowledge recipient to appreciate the value of externally held knowledge, absorb the knowledge, and take action on that knowledge. Therefore, the existence of competence trust is essential for both vendors and clients. This can be ensured, for instance, prior to awarding outsourcing contracts, the client organizations need to properly evaluate vendors based on their experience and technical capabilities. It is also advantageous for the vendors to be trusted in their competence by their clients. As a result, vendors are expected to update and improve their technical knowledge stocks on regular basis. This can be by establishing working relationships with local academic institutions that are engaging in computing disciplines. Such relationships can take different forms, such as getting consultancy services, sponsoring students' graduation projects and sharing the resulting knowledge output, and offering internships to undergraduate and postgraduate students. The development of such capacity enables vendors to better satisfy their local clients' needs and develop a trusting relationship in their competence.

8.4. Limitations of the Study

Despite the above significant contributions, this study has also limitations which are worth considering as they open up fruitful avenues for future research. The study's limitations are discussed below.

The first limitation of the study is a cross-sectional research design. It only captures a snap-shot of knowledge factors in ISO arrangements at a static point in time. The development of mutual disseminative capacity, mutual absorptive capacity, and mutual learning intent leading to successful knowledge transfer and the impact of the utilization of the transferred knowledge on ISO success is an ongoing phenomenon. Due to access and resource constraints, it was difficult for this research to conduct a longitudinal survey. To overcome this limitation, each respondent

was made to answer each survey question concerning one of their recently completed or ongoing projects that were entered in their last implementation stage (at the time of conducting the research), to minimize the potential of memory recall bias.

Second, the relatively small sample size. Gathering matched-pair survey data is challenging; however, a sample size of 150 compares well with other matched-pair survey studies. However, there may be other influencing factors that should be examined to develop a more comprehensive understanding of the knowledge factors in onshore ISDO relationships.

Third, random sampling was infeasible because a database that aggregates data for domestically outsourced information systems development projects in Ethiopia was not available. As a result, the study adopted a purposive, not a random, sampling technique in selecting information systems development projects that were undertaken with onshore outsourcing deals. The selected sampling technique does not allow the results to be generalized to a wider population.

Fourth, the study's research design was based on the notion of the key informant approach wherein the primary respondents were client and vendor project managers. Although most project managers had 1 to 5 years of experience in managing outsourcing projects and were believed to be qualified enough to answer the survey questions concerning determinants of onshore ISDO relationships and indicators of mutual ISO success, their perceptions may not match with that of top managers, IS/IT managers client and vendor organizations, developers, and end-users. Fifth, and finally, due to the complexity of the proposed research model, the current study did not include all the knowledge factors influencing onshore ISDO success and it lacked the inclusion of control variables.

8.5. Implications for Future Research

Based on the above-identified limitations and the implications of the findings of the current research, the following are suggested as the possible avenues for further research.

Some studies on the effect of knowledge factors such as knowledge transfer and knowledge utilization on ITO performance (e.g., Teo and Bhattacharjee, 2014), suggest that ITO performance impact from these knowledge factors unfold over time. As a result, the measurement would require collecting and analyzing historical ISO performance data. During the preliminary study, getting accessible historical data on ISO projects were difficult in the case

of Ethiopian organizations. Thus, it may be fruitful for future research to examine the knowledge factors using a longitudinal design that tracks the impact of knowledge transfer, mutual absorptive capacity, and knowledge utilization on onshore ISDO success over time.

As indicated earlier, the current study did not include all the knowledge factors influencing onshore ISDO success in the Ethiopian context. Accordingly, in current as well as in prior studies, the effect of the recipient's motivation to learn on knowledge transfer has been given due attention. However, if the knowledge source perceived the recipient lacks the motivation to learn, the source might not be encouraged to transfer its knowledge and become reserved. Thus, it would be interesting for future research to conduct an empirical examination on such association. Moreover, although knowledge transfer does not mean knowledge utilization (Davenport & Prusak, 1998), the construct knowledge utilization has received inadequate focus in earlier studies (Teo and Bhattacharjee, 2014). As a result, further study is necessary to gain a deeper understanding of what facilitates or hinders successful knowledge utilization in ISDO relationship. The possible avenue for future research could be (a) the effect of perceived usefulness of knowledge (i.e., the extent to which a knowledge receiver perceived knowledge transferred from a knowledge source as meaningful, relevant, and action-oriented) on knowledge utilization; (b) the impact of the organizational culture (such as valuing expertise and collaboration and fostering learning and knowledge sharing) of each outsourcing partner on knowledge utilization.

Future research may also further investigate whether the nature of knowledge being transferred (such as knowledge tacitness, knowledge explicitness, and knowledge complexity) will moderate the impacts of mutual disseminative capacity, mutual learning intent, and mutual absorptive capacity on knowledge transfer.

Control variables such as project complexity and project size were found influential toward ISO success (Moon et al., 2014; Rai et al., 2009). Thus, future research is encouraged to examine whether knowledge utilization is a stronger antecedent of ISDO success than project complexity and project size.

In order to minimize the effect of respondent's bias in answering questions, future research seeking to validate/revalidate the current research model and its measurement instruments should collect data for the dependent variable mutual ISO success from primary sources other than the

project manager (or equivalent title) who has the experience in managing outsourcing contracts and responsible for at least one project. The appropriate primary sources of data to be targeted while investigating mutual ISO success through the lens of knowledge-related factors could include managers of client and vendor organizations and IS/IT managers of each organization, by taking the client-vendor dyads from each source.

Finally, by its nature, outsourced information systems development project is complex and a knowledge-intensive work characterized by knowledge exchange, creation, storage, and utilization. Thus, one avenue for future study may be a design science approach for managing project level knowledge. This can be, for example, the development of a knowledge-based system by integrating project level processes of knowledge transfer, creation, storage, and utilization with the problem to be solved, the required knowledge content, transfer mechanisms, and antecedents (i.e., facilitating factors) components.

8.6. Final Concluding Remarks

This study provided an empirical support to how both vendors and clients can increase onshore ISDO success by mutually enhancing their knowledge-related practices in Ethiopia, a developing economy context. This study appears to be one of the first empirical studies to demonstrate the significance of researching mutual issues that both local vendors and clients encounter in their knowledge-based onshore ISDO practices. Given that the lower maturity level of ISO success in a developing economy and the complexity and knowledge-intensive nature of the IS development process, the findings of this study hopefully shed some insight in raising awareness of the importance of developing the knowledge capabilities' of both clients and vendors that engaged in ISO engagements including disseminative capacity, absorptive capacity, learning intent, knowledge transfer, and knowledge utilization.

This study also made an original contribution to IS and ISO literature in Ethiopia and Africa a by developing and empirically validating a knowledge-based dyadic onshore ISDO success theoretical model within the context of Ethiopia by using data collected from both client and vendor organizations involved in onshore ISDO relationships. By identifying common viewpoints between the involved parties, the current study identified the key knowledge factors impacting onshore ISD-outsourcing success.

The exploratory study and the KBV and SET theories employed enabled to understand and explore the contribution of knowledge-related factors on onshore ISDO success, as well to identify the theoretical relationships among these factors. The empirical findings of this study showed that knowledge utilization is a more powerful contributor to mutual onshore ISDO success than mutual absorptive capacity. The findings also indicated that compared to mutual absorptive capacity, knowledge transfer has a stronger predictor of knowledge utilization. The findings further demonstrated that mutual disseminative capacity is the most important factor in predicting knowledge transfer in the onshore ISDO relationships. However, the results of the study suggested that in a knowledge-rich phenomenon (i.e., ISDO), not only does the mutual disseminative capacity of the knowledge sources affect knowledge transfer but also the mutual absorptive capacity and the mutual learning intent of the knowledge recipient affect successful knowledge transfer. The other important finding from the study is that mutual disseminative capacity contributes most to mutual absorptive capacity, followed by mutual learning intent and mutual competence trust.

In closing, this study contributes novel insights to the growing body of IS and ISDO research, presents constructs and measures that may be adapted in future studies, and suggests ample avenues for future research emanating from the study. It also provides directions for practitioners to develop relevant courses of action and to facilitate productive knowledge transfer, acquisition, and utilization during their ISDO deals.

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APPENDICES

Appendix 4.1a: Interview Guide (Exploratory Study)

SECTION A: Demographics of the Respondents

- What is the name of organization?
- What is your job title?
- How many years of experience you have in managing ISO projects or outsourcing relationship?
- What is the name of the outsourced ISD project?
- Could you tell me about the project objective?
- What is the name of your client/ vendor that this particular project is undertaken?
- Could you tell me the status of this project?
- What is your role in the project?

SECTION B: ISO Success and Knowledge-related factors

1. How do you define ISO success? or what are the indicators of ISO success?
2. What are the main facilitators or contributors to ISO success?
 - *[if knowledge transfer is not mentioned above]:*
 - What is your view regarding the effect/contribution of knowledge transfer on outsourced IS project success? What are the concrete examples for saying so?
3. What types of knowledge does your company need from your client in order to develop a given information systems (*vendor*)?
 - ✓ How are these knowledge important for you?
4. What types of knowledge does your organization require from vendor? (*client*).
 - ✓ How are these knowledge important for you?
5. What mechanism/s did you employ to transfer your knowledge to your outsourcing partner?
6. What factors facilitate or inhibit knowledge transfer and utilization during the course of outsourced ISD projects?
7. To what extent each factor influences knowledge transfer in IS outsourcing? Why?
 - *[if not mentioned above]:*
 - ✓ How do you see the impact of:
 - a) learning intent,
 - b) absorptive capacity,
 - c) trust, and
 - d) perceived value of knowledge on knowledge transfer?
8. Do you have any other idea you want to add regarding knowledge transfer and IS outsourcing situations in Ethiopia?

Appendix 4.1b: Sample Initial themes/Patterns Generated Using NVivo 11

Nodes

Name	Sources	References	Created On	Created By	Modified On	
Dimensions of IS Outsourcing Success		10	38	7/4/2017 7:48 AM	SAN	7/15/2017 11:45 A
Client Perspective		3	3	7/4/2017 7:56 AM	SAN	7/4/2017 7:58 AM
User Satisfaction		3	3	7/4/2017 7:57 AM	SAN	7/4/2017 7:59 AM
Client-vendor Perspective		8	14	7/4/2017 7:56 AM	SAN	7/15/2017 11:45 A
Derived Values		2	2	7/4/2017 8:19 AM	SAN	7/15/2017 11:45 A
Learning Benefits		6	8	7/4/2017 8:19 AM	SAN	7/15/2017 11:45 A
Relationship Satisfaction		4	6	7/4/2017 8:18 AM	SAN	7/4/2017 8:23 AM
Project Perspective		10	18	7/4/2017 7:56 AM	SAN	7/4/2017 8:05 AM
Process Success		2	3	7/4/2017 8:03 AM	SAN	7/4/2017 8:16 AM
System Quality		9	15	7/4/2017 8:03 AM	SAN	7/4/2017 8:10 AM
Functionality		3	3	7/4/2017 8:08 AM	SAN	7/4/2017 8:11 AM
Maintainability		4	5	7/4/2017 8:07 AM	SAN	7/4/2017 8:14 AM
Performance		1	1	7/4/2017 8:07 AM	SAN	7/4/2017 8:13 AM
Security		1	1	7/4/2017 8:06 AM	SAN	7/4/2017 8:13 AM
Usability		5	5	7/4/2017 8:06 AM	SAN	7/4/2017 8:13 AM
Vendor Perspective		1	1	7/4/2017 7:56 AM	SAN	7/4/2017 7:59 AM
Increase Market Opportunities		1	1	7/4/2017 8:01 AM	SAN	7/4/2017 8:01 AM
Factors Affecting Knowledge Transfer		10	55	6/7/2017 5:49 PM	SAN	8/17/2017 12:24 A
Client Perspective		9	30	6/8/2017 9:44 AM	SAN	8/17/2017 12:24 A
Attitude Towards IS development Project Participatio		2	3	6/17/2017 6:02 PM	SAN	6/17/2017 6:02 P
Availability of Domain Expertise		2	2	6/10/2017 12:13 P	SAN	7/15/2017 11:45 A
Basic Computer skills		2	2	6/10/2017 12:35 P	SAN	8/17/2017 12:24 A
Lack of Commitment		2	2	6/17/2017 6:04 PM	SAN	6/17/2017 6:05 P
Lack of Knowledge on Why to Utilize IS		1	1	6/17/2017 3:30 PM	SAN	6/17/2017 3:31 P
Marginalizing IS Staffs		1	1	6/10/2017 12:45 P	SAN	6/10/2017 12:46 P

Nodes

Name	Sources	References	Created On	Created By	Modified On
Perceived In-house IS Development Capability		1	1 6/13/2017 8:16 PM	SAN	6/13/2017 8:16 P
Staffs Turnover		5	7 6/10/2017 11:47 A	SAN	8/17/2017 12:24 A
Work Overload		1	2 6/17/2017 4:16 PM	SAN	6/17/2017 5:45 P
Client-Vendor Perspective		10	28 6/8/2017 9:45 AM	SAN	7/15/2017 11:45 A
Absorptive capacity		3	4 6/10/2017 4:16 PM	SAN	6/12/2017 9:04 A
Collaboration		1	2 6/10/2017 4:14 PM	SAN	6/10/2017 4:24 P
Disseminative Capacity		3	3 6/17/2017 8:40 AM	SAN	6/17/2017 8:45 A
Knowledge Retention		6	9 6/13/2017 8:03 PM	SAN	8/17/2017 12:24 A
Learning Culture		2	2 6/10/2017 4:16 PM	SAN	6/11/2017 4:48 P
Learning Intent		3	3 6/10/2017 4:15 PM	SAN	7/15/2017 11:45 A
Project Novelty		1	3 6/10/2017 4:15 PM	SAN	6/10/2017 4:46 P
Reliance on Formally Written Knowledge		3	4 6/19/2017 4:24 PM	SAN	7/15/2017 11:45 A
Top management Interference		1	2 6/10/2017 4:16 PM	SAN	6/11/2017 4:48 P
Trust		6	7 6/10/2017 4:14 PM	SAN	7/15/2017 11:45 A
Benevolence Trust		2	2 6/12/2017 8:23 AM	SAN	7/15/2017 11:45 A
Competence Trust		5	6 6/12/2017 8:22 AM	SAN	7/15/2017 11:45 A
Vendor Perspective		4	6 6/8/2017 9:45 AM	SAN	6/14/2017 2:43 A
Availability of Specialized IS development personnel		2	2 6/10/2017 3:50 PM	SAN	6/10/2017 3:53 P
Little Background or Business Knowledge		1	1 6/17/2017 10:02 A	SAN	6/17/2017 10:02 A
staff Turnover		1	2 6/10/2017 3:51 PM	SAN	6/12/2017 4:50 P
IS Outsourcing Success Contributing Factors		10	58 6/3/2017 4:46 PM	SAN	7/15/2017 11:45 P
Knowledge Transfer		9	20 6/5/2017 6:19 PM	SAN	7/15/2017 11:45 A
Contribution of Knowledge Transfer		10	31 6/5/2017 7:28 PM	SAN	7/15/2017 11:45 A
Client Perspective		5	6 6/5/2017 7:30 PM	SAN	6/6/2017 5:14 PM
Creates a Sense of Project ownership		1	1 6/6/2017 5:39 PM	SAN	6/6/2017 5:42 PM
Effective Utilization of the IS		1	1 6/6/2017 5:38 PM	SAN	6/6/2017 5:42 PM

[<Internals\Interviews\Client Y>](#) - § 1 reference coded [11.08% Coverage]

Reference 1 - 11.08% Coverage

- o *There is a circular from the office of the Prime minister that states all public sector organizations should get the approval of INSA when they are deciding a software to be developed by outsourcing means. Unless it is approved, the required budget will not be granted. However, this government organ(INSA) is*

also participating as a vendor(to develop software for public sector organizations). In my practical experience, this government unit reviews the project documents submitted to it for getting approval. Following their review, if they see the project is a multi-million project, it is approved and becomes their selected project to be developed by them. Projects with small budget get their approval and the requesting organization can outsource it for other vendors. Such order will not create a conducive work environment for local software developing company. It hampers the growth of local software.

[<Internals\\Interviews\\Vendor D>](#) - § 1 reference coded [0.51% Coverage]

Reference 1 - 0.51% Coverage

The government must set a clear ICT procurement policy

Lack of Government Support

[<Internals\\Interviews\\ Vendor B >](#) - § 2 references coded [1.17% Coverage]

Reference 1 - 0.60% Coverage

- o the absence of fair and equitable treatment in the domestic ISO market

Reference 2 - 0.58% Coverage

- o absence of protection to indigenous Ethiopian national ICT companies

[<Internals\\Interviews\\ Vendor D >](#) - § 1 reference coded [0.74% Coverage]

Reference 1 - 0.74% Coverage

Appendix 4.2a: Initial Pool of Measurement Items

Construct	Items	Reference
ISO Success	The project met the budgeted costs.	Xu and Yao(2014), Westner and Strahringer(2010)
	<i>The project met the schedule.</i>	Xu and Yao(2014), Westner and Strahringer (2010), Patnayakuni et al(2006)
	<i>Developed system was easily usable.</i>	Park et al. 2012), Gopal and Gosain (2012),Sedera and Gable (2010)
	<i>The newly developed system is compatible with our existing hardware and software systems.</i>	New
	Users perceive that the system meets intended functional requirements.	Park et al.(2012), Tiwana(2004), Westner and Strahringer(2010)
	<i>Systems that have been developed have high reliability.</i>	Patnayakuni et al(2006), Sedera and Gable(2010), Tiwana(2004), Gopal and Gosain(2010)
	The [the IS] user interface can be easily adapted to one's personal approach	Sedera and Gable(2010)
	[the IS] requires only the minimum number of fields and screens to achieve a task	Sedera and Gable(2010)
	All data within [the IS] is fully integrated and consistent	Sedera and Gable(2010)
	System was designed with flexibility.	Park et al. 2012,Gopal and Gosain ,2009,Sedera and Gable(2010)

<i>The system developed is scalable, i.e., it can be extended to form fully operational system.</i>	New
<i>Users are satisfied with the overall quality of developed systems.</i>	Patnayakuni et al(2006), Westner and Strahringer (2010), Ravichandran and Rai (2000)
<i>Overall fit with customer needs.</i>	Tiwana(2004)
<i>Users are satisfied with the developed systems.</i>	Patnayakuni et al(2006)
<i>By reference to the contract, a project goal was achieved.</i>	Xu and Yao(2014), Tiwana(2004), Park et al. (2012)
<i>This cooperation has achieved planned goal.</i>	Liu et al(2010)
<i>We are satisfied with our overall benefits from outsourcing</i>	Grover et al ,1996, Lee(2001)
<i>Going by the results, this project can be regarded as successful.</i>	Xu and Yao(2014)
<i>All demands of the customers have been satisfied.</i>	Xu and Yao(2014)
There was little backlog of development work during the project.	Xu and Yao(2014)
Fixing bugs and other types of rework account for little proportion of the systems development effort.	Patnayakuni et al.(2007), Xu and Yao(2014)
How satisfied was your organization with the overall outcome of our offshoring arrangement.	Westner and Strahringer(2010)
Fixing bugs and other types of rework account for little proportion of the systems development effort.	Patnayakuni et al(2006)
<i>We regard this cooperation as worthwhile.</i>	Liu et al (2010)
<i>We are satisfied with the increased sales growth from this cooperation.</i>	Liu et al(2010)
<i>I would like to continue to work with him/her in future projects because I like being associated with him/her.</i>	Park et al. (2012)
<i>I would like to continue to work him/her in future projects because I genuinely enjoy relating to them.</i>	Park et al. (2012)
I have strong loyalty toward him/her	Park et al. (2012)
We have been able to refocus on core business	Grover et al (1996), Lee

		(2001)
	We have enhanced our IT competence	Grover et al (1996)
	We have increased access to skilled personnel	Grover et al (1996)
	We have enhanced economies of scale in human resources	Grover et al (1996)
	We have enhanced economies of scale in technical resources	Grover et al (1996)
	We have increased control of IS expenses	Grover et al (1996)
	We have reduced the risk of technological obsolescence.	Grover et al (1996)
	We have increased access to key information technologies.	Grover et al (1996)
Knowledge Transfer	<i>We shared the minutes of meetings or discussion records in an effective way.</i>	Park and Lee(2014)
	<i>We always provided technical documents, including manuals, books, training materials to each other.</i>	Park and Lee(2014)
	We shared project plans and the project status in an effective way.	Park and Lee(2014)
	<i>We always shared experience or know-how from work in a responsive and effective way.</i>	Park and Lee(2014)
	<i>Acquired vendor's knowledge on designing applications architecture.</i>	Teo and Bhattacharjee(2014)
	<i>Acquired programming skills from the vendor</i>	Teo and Bhattacharjee (2014)
	<i>Obtained software testing skills from the vendor</i>	Teo and Bhattacharjee (2014)
	<i>We shared our business knowledge about the project to the client during the project.</i>	Xu and Yao(2014)
	<i>We shared the best industry practices about the project with our client.</i>	Xu and Yao(2014), Dhanaraj et al(2004)
	<i>We shared our technical knowledge about the project with our client.</i>	Xu and Yao(2014)
	<i>Our client shared relevant domain knowledge of the project(e.g. general standard, policy, business process) with us during the project</i>	Xu and Yao(2014)
	Our client shared relevant business knowledge about the project with us during the project	Xu and Yao(2014)
	<i>Our client shared their relevant documents (e.g. requirements specification) with us during the project</i>	Xu and Yao(2014)
	<i>Our client transferred business know-how to us during the project</i>	Xu and Yao(2014)

	<i>obtained knowledge about system testing procedures.</i>	New
	<i>We and our service provider share business manuals, models, and methodologies with each other</i>	Lee(2001)
	<i>We and our service provider share each other's success and failure stories</i>	Lee(2001)
	<i>We and our service provider share know-how from work experience with each other.</i>	Lee(2001)
	Business manuals, models, and methodologies	Lee et al(2008)
	Each other's success and failure stories	Lee et al(2008)
	Know-how from work experience	Lee et al(2008)
Knowledge Utilization	<i>increase our knowledge about the newly developed system functionalities and its application.</i>	New
	<i>The knowledge obtained improves our ability to develop the system.</i>	New
	<i>Improve business processes in other business functions.</i>	Teo and Bhattacharjee (2014)
	<i>Develop new and innovative IT solutions for our business</i>	Teo and Bhattacharjee (2014)
	<i>Exploit our IT hardware and/or software infrastructure and capabilities.</i>	Teo and Bhattacharjee (2014)
	<i>Improve our IT and/or project management skills.</i>	Teo and Bhattacharjee (2014)
	<i>Improve our capabilities in dealing with other vendors.</i>	Teo and Bhattacharjee (2014)
	<i>The transferred knowledge can facilitate the innovation ability of our company.</i>	Chen et al.(2014)
	<i>Gained some design skills for developing applications</i>	Teo and Bhattacharjee(2014)
Disseminative Capacity	Consultant/IC key user can deal with others effectively.	Xu and Ma(2008)
	<i>Consultant/IC key user expresses his/her ideas clearly.</i>	Xu and Ma(2008)
	<i>Consultant/IC key user usually says the right thing at the right time.</i>	Xu and Ma(2008)
	Foreign parent employees can identify and clearly explain both orally and in writing what the South Korean IJV needs.	Park et al(2013)
	When the adoption of different practices of foreign parents is encouraged,	Park et al(2013)

foreign parent employees can clearly explain why the IJV should adopt such practices.	
It is easy for IJV employees to identify a foreign parent employee who can help them adapt the knowledge transfer.	Park et al(2013)
<i>Oral and written materials (in the form of memos, notes or reports) provided by the foreign parent are relevant to improvement of IJV activities.</i>	Park et al(2013)
<i>(Consultant William) has a good command of the language.</i>	Ko et al. (2005)
(Consultant William) typically gets right to the point.	Ko et al. (2005)
(Consultant William) can deal with others effectively.	Ko et al. (2005)
<i>(Consultant William's) written communication is difficult to understand.</i>	Ko et al. (2005)
<i>(Consultant William) expresses his/her ideas clearly.</i>	Ko et al. (2005)
<i>(Consultant William's) oral communication is difficult to understand.</i>	Ko et al. (2005)
(Consultant William) usually says the right thing at the right time.	Ko et al. (2005)
<i>During the development process, electronic communication channels helped us communicated quickly.</i>	Xu and Yao(2014)
<i>During the development process, we can easily communicate ideas to our client by using electronic communication channels.</i>	Xu and Yao(2014)
The members from various functional departments will work together to share their experience.	Liu et al (2010)
<i>The firm sets up the mechanisms such as informal meetings, product seminar, and apprenticeship to facilitate knowledge exchange across-functional boundaries.</i>	Liu et al (2010)
The firm promotes dynamic interpersonal and interdepartmental cooperation.	Liu et al (2010)
<i>To select the knowledge to be transferred, our partner successfully identified the gaps in our knowledge base.</i>	Schulze et al(2014)
<i>When conveying the above-mentioned set of knowledge, there were many misunderstandings.</i>	Schulze et al(2014)
<i>When conveying the above-mentioned set of knowledge, our partner used many abbreviations that we did not understand.</i>	Schulze et al(2014)
<i>When conveying the above-mentioned set of knowledge, our partner used many technical terms that we did not understand .</i>	Schulze et al(2014)
<i>Our partner supported us by applying the above-mentioned set of knowledge by</i>	Schulze et al(2014)

	<i>coaching us (i.e., by means of instructions, demonstrations of utilizations).</i>	
Absorptive Capacity	<i>Have the ability to acquire new knowledge from the parent company to achieve targets.</i>	CHANG et al(2012)
	<i>Have the technical competency to absorb the knowledge from the parent company</i>	CHANG et al(2012)
	<i>The vendor can use our specific business domain knowledge to successfully leverage it in the final IS product.</i>	New
	<i>Have the ability to exploit new knowledge or practices from the parent company.</i>	CHANG et al(2012)
	<i>(Client Alisha) has a vision of what the implementation of (Purchasing) module project is trying to achieve.</i>	Ko et al. (2005)
	<i>Client Alisha) has the technical competence to absorb the technical knowledge about module</i>	Ko et al. (2005)
	<i>(Client Alisha) has the managerial competence to absorb the business knowledge about module</i>	Ko et al. (2005)
	<i>(Client Alisha) can best exploit new information about the (Purchasing) module.</i>	Ko et al. (2005)
	<i>(Client Alisha) can help solve problems associated with the (Purchasing) module.</i>	Ko et al. (2005)
	<i>(Client Alisha) has the necessary skills to implement the (Purchasing) module.</i>	Ko et al. (2005)
	<i>The vendor can apply the acquired business knowledge to best perform other related outsourced IS projects and to explore marketing opportunities.</i>	New
	<i>The adopting firm had the managerial competence to absorb the ERP system.</i>	Wang et al(2007)
	<i>We leveraged the customer's knowledge in many functional areas.</i>	Tiwana(2004)
	<i>We have the capability to achieve the objectives of tasks by using ERP.</i>	Candra(2012)
	<i>We have superior skills and capabilities to perform tasks using ERP compared to other corporate.</i>	Candra(2012)
	<i>We can apply the knowledge derived from ERP to our tasks.</i>	Candra(2012)
	<i>The client can use our technology specific knowledge to fully realize the potential of new system.</i>	New
	<i>We have the ability to assimilate the found knowledge in our organization.</i>	Lee(2001)
	<i>We have the ability to exploit the gathered knowledge for our organization.</i>	Lee(2001)

	<i>New opportunities to serve our clients are quickly understood.</i>	Winkelbach and Walter(2015)
	<i>We quickly analyze and interpret changing market demands</i>	Winkelbach and Walter(2015)
	<i>We quickly recognize usefulness of new external knowledge to existing knowledge.</i>	Winkelbach and Walter(2015)
	<i>We easily grasp the opportunities of new external knowledge for firm.</i>	Winkelbach and Walter(2015)
	It is clearly known how activities in our firm should be performed.	Winkelbach and Walter(2015)
	We constantly consider how to better exploit knowledge.	Winkelbach and Walter(2015)
	<i>Our firm has no difficulty implementing new products and services.</i>	Winkelbach and Walter(2015)
	I have a vision of what this project is trying to achieve.	Xu and Ma(2008)
	I have the technical competence to absorb the ERP knowledge	Xu and Ma(2008)
	<i>I have a clear understanding of goals, tasks, and responsibilities of this project.</i>	Xu and Ma(2008)
	I have the necessary knowledge to understand ERP.	Xu and Ma(2008)
Learning Intent	Acquiring marketing knowledge from our foreign partner is one of our local partner's objectives.	Hau and Evangelista(2007)
	Our local partner encourages the local marketing staff to learn and acquire our foreign partner's marketing knowledge.	Hau and Evangelista(2007)
	<i>Our local partner has provided the necessary resources needed to support the acquisition of marketing knowledge from our foreign partner.</i>	Hau and Evangelista(2007)
	<i>Our local staff wants to imitate expatriates in how they undertake marketing tasks in the JV.</i>	Hau and Evangelista(2007)
	Our local staff feels that they need to learn about marketing from our foreign staff.	Hau and Evangelista(2007)
	Our marketing staff has a strong interest in learning from our foreign partner.	Hau and Evangelista(2007)
	<i>the vendor had the desire to learn our business best practices.</i>	New

<i>the vendor was highly motivated to learn our specific business knowledge (e.g., business domain knowledge, work flows, and business rules).</i>	New
One of our partner's objectives in forming the alliance was to learn about our management techniques.	TSANG((2002)
One of your company's objectives of forming this joint venture is to learn specific skills and competencies (e.g., technology) held by your Chinese partner(s)	TSANG((2002)
<i>One of your company's objectives of forming this joint venture is to learn more about how to do business in China.</i>	TSANG((2002)
One of your company's objectives of forming this joint venture is to learn or improve the skills of inter-firm cooperation in a joint venture setting.	TSANG((2002)
<i>The client viewed this outsourcing relationship as a means to learn or improve project management skills.</i>	New
When deciding to enter into the alliance, your company had a strong desire, determination and will to learn about a particular technology/process owned by your partner.	Simonin(2004)
<i>This alliance is viewed as a means to learn about a particular technology/process held by your partner, rather than as a way to simply use or rent this know-how.</i>	Simonin(2004)
<i>We were interested in obtaining technical knowledge on various technologies.</i>	Teo and Bhattacharjee(2014)
<i>We were interested in obtaining information on business best practices.</i>	Teo and Bhattacharjee(2014)
<i>We were interested in obtaining technical expertise (e.g., design, methods).</i>	Teo and Bhattacharjee(2014)
<i>We were interested in acquiring IT and/or project management skills.</i>	Teo and Bhattacharjee(2014)
<i>Through interaction with the client, our team has learned about the client's organizational culture.</i>	Deng and Mao(2012)
<i>Through interaction with the with the client, our team has learned about the</i>	Deng and Mao(2012)

	<i>client's business domain knowledge.</i>	
	<i>Through interaction with the with the client , our team has learned about the client's work process.</i>	Deng and Mao(2012)
	<i>Through interaction with the with the client, our team has learned about the client's development environment (such as the technology platform and business environment).</i>	Deng and Mao(2012)
	Through completing the project for the client, our team has learned from the client in quality control methods.	Deng and Mao(2012)
	Through completing the project for the client, our team has learned from the client in workload estimation and management methods.	Deng and Mao(2012)
	<i>Through completing the project for the client, our team has learned from the client in schedule planning and management methods.</i>	Deng and Mao(2012)
	<i>Through completing the project for the client, our team has learned from the client in software development process.</i>	Deng and Mao(2012)
	<i>Through completing the project for the client, our team has learned from the client in conformation to software coding and testing standards.</i>	Deng and Mao(2012)
Competence Trust	<i>Consultant Brianna approaches his/her job with professionalism and dedication.</i>	Ko(2014)
	<i>Given Consultant Brianna's track record, I see no reason to doubt his/her competence and preparation for the job.</i>	Ko(2014)
	<i>I can rely on Consultant Brianna not to make my job more difficult by careless work.</i>	Ko(2014)
	<i>Most people, even those who are not close friends of Consultant Brianna, trust and respect him/her as a coworker.</i>	Ko(2014)
	<i>I can depend on my colleague to meet his/her responsibilities</i>	Jain et al.(2015)
	I can rely on my colleague to do what is best at work	Jain et al.(2015)
	<i>My colleague follows through with commitments he/she makes</i>	Jain et al.(2015)
	Given my colleague's track record, I see no reason to doubt his/her competence	Jain et al.(2015)
	<i>This person is very capable of performing his or her job</i>	Pacharapha and Ractham (2012)
	<i>This person is known to be successful at things he or she tries to do</i>	Pacharapha and Ractham (2012)
	<i>I feel very confidence about this person's skills</i>	Pacharapha and Ractham

		(2012)
	<i>This person has good track record in this domain of knowledge</i>	Pacharapha and Ractham (2012)
	<i>This vendor is known to be successful at information systems development projects that are done on contractual basis.</i>	New
	I would have to say that we have both made considerable emotional investments in our working relationship.	McALLISTER(1995)
	This member approaches his/her job with professionalism and dedication.	Chowdhury(2005)
	Given this member's track record , I see no reason to doubt his/her competence and preparation for the job.	Chowdhury(2005)
	I can rely on this member not to make my job more difficult by careless work.	Chowdhury(2005)
	<i>Most people, even those who are not close friends of this member, respect him/her as a co a co-worker</i>	Chowdhury(2005)
	<i>Other work associates of mine who must interact with this member consider him/her to be knowledgeable</i>	Chowdhury(2005)
	This person approaches his/her job with professionalism and dedication.	McALLISTER(1995)
	Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.	McALLISTER(1995)
	I can rely on this person not to make my job more difficult by careless work.	McALLISTER(1995)
	Most people, even those who aren't close friends of this individual, trust and respect him/her as a coworker.	McALLISTER(1995)
	Other work associates of mine who must interact with this individual consider him her to be trustworthy.	McALLISTER(1995)
	If people knew more about this individual and his her background, they would be more concerned and monitor his her performance more closely.	McALLISTER(1995)
	I believed that this person approached his or her job with professionalism and dedication.	Levin and Cross(2004)
	given his or her track record, I saw no reason to doubt this person's competence and preparation.	Levin and Cross(2004)
	<i>We know that our Japanese partner is capable and competent.</i>	Johnson and Cullen(1996)
	Our Japanese partner is always frank and truthful in its dealings with us.	Johnson and Cullen(1996)

APPENDIX 4.2b: Client Side Survey Instrument

Section One: General Questions about the Organization & Respondent

Please give your response to the questions under this section by either **putting a tick mark (✓) at the appropriate box** or by **writing on the blank space provided**.

I) Organization Category: Public Private Others, please specify: _____

II) Industry Type:

Technology/Communication

Health /medical

Manufacturing

Trade: wholesale/retail

Transportation

Petroleum and chemical

Finance/banking/insurance

Real-estate

Construction and engineering

Travel/tourism/hotel

Entertainment

Others, Please specify: _____

III) Your Job Title and Position: _____

IV) Name of the Outsourced Information System development Project _____

V) Project status(mark ' ✓ '): Currently Completed Currently Underway

VI) Your Role in the Project : _____

VII) Name of a *software developing company* that has been undertaking the above mentioned project _____

VIII) Your Experience in Information Systems outsourcing/ managing outsourcing relationship:

1-5 yrs

6-10 yrs

11-15 yrs

more than 15 yrs

IX) In general, during these years, how many IS/IT projects that you have outsourced? _____

X) What is the total estimated cost of these projects? (*in Ethiopian Birr*) _____

Section Two: Related to your specific information system development project mentioned in Roman numeral IV of page 3, please provide your level of agreement or disagreement with the following statement.(please mark only one 'X' for each line in the labeled column).
Strongly disagree=1, Disagree=2, Disagree somewhat=3, undecided=4, Agree somewhat=5, Agree= 6, Strongly Agree=7

		1	2	3	4	5	6	7
Competence Trust								
In our relationship with the vendor...								
C_CTR1	we can depend on the vendor to meet its responsibilities.							
C_CTR2	the vendor is known to be successful at IS/IT projects it tries to do through outsourcing means.							
C_CTR3	we can rely on the vendor to keep its commitments made to us.							
C_CTR4	the vendor approaches its task of information systems development with professionalism.							
C_CTR5	we can rely on this vendor not to make our project tasks more difficult by careless work.							
C_CTR6	this vendor is very capable of performing its job.							
C_CTR7	given the vendor's reputation in the local outsourcing market, we see no reason to doubt its competence and preparation for undertaking the project.							
C_CTR8	other work associates of us who must interact with this vendor consider it to be knowledgeable.							
Disseminative Capacity								
As a source of technical knowledge (e.g., technical know-how, software development methodology, software coding, and testing procedures)...								
V_DC1	the vendor properly recognized our knowledge requirements by identifying the gaps in our and its knowledge bases prior to knowledge transfer.							
V_DC2	the vendor knew precisely the relevance of its transferred knowledge for us.							
V_DC3	the vendor has no difficulty to express project concept clearly.							
V_DC4	the vendor has a good command of the language.							
V_DC5	the vendor explained its technical knowledge in a way we can understand.							
V_DC6	the vendor's oral communication was easy to understand.							
V_DC7	the vendor's written communication was easy to understand.							
V_DC8	the vendor sets up the mechanisms (<i>such as face-to-face interactions, project meetings, technical trainings, and demonstrations</i>) to facilitate its knowledge exchange with us.							

V_DC9	the vendor devised written documents (<i>e.g., requirements/design specifications, formal processes, routines, guidelines, models, and manuals</i>) to facilitate transfer of its knowledge to us.								
Learning Intent In our relationship with this vendor...									
V_LI1	the vendor had a strong interest to learn about IS development process knowledge possessed by our organization/company (<i>e.g., IS development methods, techniques, tools and approaches</i>).								
V_LI2	the vendor had the motivation to learn more about our development environment (<i>such as the technology platform and business environment</i>).								
V_LI3	the vendor had the desire to imitate us in how we perform our business-related tasks in our day-to-day activities.								
V_LI4	the vendor was highly motivated to learn our specific business knowledge (<i>e.g., business domain knowledge, work flows, and business rules</i>).								
V_LI5	the vendor had the desire to learn our business best practices.								
V_LI6	the vendor provided us the necessary resources needed to support its learning and acquisition of business process knowledge from us.								
V_LI7	the vendor viewed this outsourcing relationship as an opportunity to learn each other's knowledge we lack, rather than as a way to simply getting the system developed.								
Absorptive Capacity As a recipient of our business knowledge...									
V_AC1	the vendor has the business competence to easily grasp the relevant business domain knowledge about the project from us.								
V_AC2	the vendor has a clear understanding of what the outsourced information system project is trying to address.								
V_AC3	the vendor has the necessary knowledge to implement new information system products and services.								
V_AC4	the vendor leveraged our specific business knowledge in the newly developed system.								
V_AC5	the vendor quickly recognizes the usefulness of our knowledge to its existing knowledge.								
V_AC6	the vendor can apply the acquired specific business knowledge of us for its organizational purposes (<i>e.g., exploring further business opportunities</i>).								
Knowledge Transfer During the course of the outsourced project, we...									
C_KT1	acquired relevant documents (such as requirements/design specifications, data flow diagrams, and test cases) from the vendor.								
C_KT2	obtained technical knowledge related to software development								

	process, tools, and techniques from the vendor.								
C_KT3	gained technology know-how from the vendor.								
C_KT4	acquired written manuals(e.g., technical or user manuals) from the vendor.								
C_KT5	gained insights from the vendor's success (or failure) stories.								
Knowledge Utilization									
We have used the above-mentioned set of knowledge gained in this relationship to...									
C_KU1	increase our understanding of the new system functionalities and its application								
C_KU2	improve the efficiency of our business functions service delivery.								
C_KU3	develop new and innovative technical solutions for our business problems.								
C_KU4	improve our IS and/or project management skills.								
C_KU5	improve our capabilities in managing outsourcing relationships.								
ISO Success									
When success of the outsourced IS project is assessed...									
C_SU1	the developed information system satisfied our needs.								
C_SU2	the project is delivered within the agreed time in the contract.								
C_SU3	by reference to the contract, the completed information system meets project objectives.								
C_SU4	it delivers business value for our organization/company (<i>e.g., build loyalty, improve service quality, and generate revenue</i>).								
C_SU5	we develop a mutually beneficial (<i>e.g., win-win, trusting</i>) relationship with the vendor.								
C_SU6	we are satisfied with our interactions with the vendor.								
C_SU7	we would like to work together with the vendor in future projects.								
C_SU8	we are satisfied with our overall benefits from outsourcing.								

APPENDIX 4.2c: Vendor Side Survey instrument

Section One: General Questions about the Organization & Respondent

Please give your response to the questions under this section by either putting a tick mark (☐) at the appropriate box or by writing on the blank space provided.

I) Company Type:

Application s are development

System Softw development

Others, please specify: _____

II) Your Job Title and Position: _____

III) Name of the client's outsourced information system development project _____

IV) Project status(**Tick ' ✓ '**): Currently Completed Currently Underway

V) Your Role in the Project : _____

VI) Name of the client/service receiver organization _____

VII) Your experience in information systems outsourcing/ managing outsourcing relationship:

1-5 yrs 6-10 yrs 11-15 yrs more than 15 yrs

VIII) In general, during these years, how many IS/IT projects outsourced to your company? _____

IX) What is the total estimated cost of these projects? (*in Ethiopian Birr*) _____

Section Two: Related to your specific information system development project mentioned in Roman numeral III of page 3, please provide your level of agreement or disagreement with the following statement. (please mark only one 'X' for each line in the labeled column). *Strongly disagree=1, Disagree=2, Disagree somewhat=3, undecided=4, Agree somewhat=5, Agree= 6, Strongly Agree=7*

		1	2	3	4	5	6	7
Competence Trust In our relationship with the client...								
V_CTR1	we can depend on the client to meet its responsibilities.							
V_CTR2	the client is known to be successful at IS/IT projects it tries to do through outsourcing means.							
V_CTR3	we can rely on the client to keep its commitments made to us.							
V_CTR4	the client approaches its task of information systems development with professionalism.							
V_CTR5	we can rely on this client not to make our project tasks more difficult by careless work.							
V_CTR6	this client is very capable of performing its job.							
V_CTR7	given the client's background, we see no reason to doubt its competence and preparation for undertaking the project.							
V_CTR8	other work associates of us who must interact with this client consider it to be knowledgeable.							
Disseminative Capacity As a source of business knowledge (e.g., requirements, business process, and work flows)..								
C_DC1	the client properly recognized our knowledge requirements by identifying the gaps in our and its knowledge bases prior to knowledge transfer.							
C_DC2	the client knew precisely the relevance of its transferred knowledge for us.							
C_DC3	the client has no difficulty to express project concepts clearly.							
C_DC4	the client has a good command of the language.							
C_DC5	the client explained its business domain knowledge in a way we can understand.							
C_DC6	the client's oral communication was easy to understand.							
C_DC7	the client's written communication was easy to understand.							
C_DC8	the client set up the mechanisms (<i>such as face-to-face interactions, project meetings, technical trainings, and demonstrations</i>) to facilitate its knowledge exchange with us.							
C_DC9	the client devised written documents (<i>e.g., requirements/design specifications, formal processes, routines, guidelines, models, and manuals</i>) to facilitate the transfer of its knowledge to us.							
Learning Intent								

In our relationship with this client, ...							
C_LI1	the client had a strong interest to learn about IS development process knowledge possessed by our company(e.g. <i>IS development methods, techniques, tools and approaches</i>).						
C_LI2	the client had the motivation to learn more about technology know-how held by our company.						
C_LI3	the client had the desire to imitate us in how we undertake information systems development tasks during the course of the outsourced project.						
C_LI4	the client was highly motivated to learn about the system when it was fully developed(e.g., <i>the steps to complete a system-related task, system components, and the business rules incorporated into the system</i>).						
C_LI5	the client had the desire to learn our best practices about the project.						
C_LI6	the client provided us the necessary resources needed to support its learning and acquisition of technical knowledge from us.						
C_LI7	the client viewed this outsourcing relationship as an opportunity to learn each other's knowledge we lack , rather than as a way to simply getting the system developed.						
Absorptive Capacity							
As a recipient of our knowledge...							
C_AC1	the client has the technical competence to grasp relevant technical knowledge about the project from us.						
C_AC2	the client has a clear understanding of what the outsourced information system project is trying to address.						
C_AC3	the client has no difficulty to implement the new information system products and services.						
C_AC4	the client can use our technology specific knowledge to fully realize the potential of the new system.						
C_AC5	the client quickly recognizes the usefulness of our knowledge to its existing knowledge.						
C_AC6	the client can apply the acquired technical knowledge for its organizational purposes (<i>such as maintaining the system, handling complex projects, and promoting new ways of doing things</i>).						
Knowledge Transfer							
During the course of the outsourced project, we...							
V_KT1	acquired relevant documents (<i>e.g., requirements/design specifications, organizational structure diagrams</i>) from the client.						

V_KT2	obtained relevant business knowledge associated with the project's problem domain from the client (<i>e.g., business processes, business rules, policies and procedures, and the business objectives</i>).								
V_KT3	gained business process know-how from the client.								
V_KT4	acquired written manuals (<i>e.g., procedural or business manuals</i>) from the client.								
V_KT5	gained insights from the client's success (or failure) stories.								
Knowledge Utilization									
We have used the above-mentioned set of knowledge gained in this relationship to...									
V_KU1	increase our understanding of how client's knowledge leveraged in many functional areas.								
V_KU2	improve our efficiency in service delivery.								
V_KU3	develop new and innovative information systems solutions for our client's business problems.								
V_KU4	improve our IS and/or project management skills.								
V_KU5	improve our capabilities in managing outsourcing relationships.								
ISO Success									
When success of the outsourced IS project is assessed...									
V_SU1	the developed information system satisfied the client's needs.								
V_SU2	the project is delivered within the agreed time in the contract.								
V_SU3	by reference to the contract, the completed information system meets project objectives.								
V_SU4	it delivers business value for our company(<i>e.g., build loyalty, improve service quality, and generate revenue</i>).								
V_SU5	we develop a mutually beneficial (<i>e.g., win-win, trusting</i>) relationship with the client.								
V_SU6	we are satisfied with our interactions with the client.								
V_SU7	we would like to work together with the client in future projects.								
V_SU8	we are satisfied with our overall benefits from outsourcing.								

Appendix 4.2d: Informed Consent (For a vendor/a client)

Addis Ababa University
IT Doctoral Program
Information Systems Track

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Project Information Statement

Title of the Project: Modeling the Knowledge Factors that Explain Onshore Information Systems Development Outsourcing Success in Ethiopia: a client-vendor dyad

Investigators:

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Dear Participant

You are kindly invited to participate in this research project. Before making your decision whether to participate or not, please read this information sheet carefully and be confident that you understand its contents. If you have any questions about the project, please don't hesitate to contact one of the investigators.

I) Researcher

This research is being conducted by Mr. Solomon Abebe, a PhD Student at IT Doctoral Program, Information Systems Track, Addis Ababa University. The research project is being conducted under the supervision of Professor Alemayehu Molla and Dr. Temtim Assefa.

II) Reason for Your Selection

Your company has been selected for the study because it has been undertaking IS/IT project/s in the local outsourcing market for a number of *client organizations of Ethiopia*. In particular, you are approached for this research as your company indicated that you have been in charge of managing a recently completed information system/IS project or an ongoing IS project/ Your organization has been selected for the study because it had undertaken IS/IT project/s by domestic outsourcing means. In particular, you are approached for this research as your company/organization indicated that you have been in charge of managing a recently completed information system/IS project or an ongoing IS project.

III) Aim of this Research/Project

The aim of the research is to **understand the factors that affect knowledge transfer** between information systems development (ISD) vendors and clients and **onshore/domestic information systems outsourcing success in Ethiopia**. Particularly, the research will seek answers on questions regarding:

- your experience of knowledge transfer and its value in information systems outsourcing projects;
- your client's/vendor's capacity to disseminate its business knowledge related to the project;
- your client's/vendor's ability to receive and use the knowledge transferred from you for the intended purposes;
- the mechanisms employed to exchange knowledge with your client/vendor;
- your client's/vendor's motivation for learning during the course of the outsourced IS project;
- your evaluation of the quality of relationship that exist between you and your client/vendor;
- your assessment of the benefits received by both you and your client/vendor from the project.

IV) Participant's Responsibilities

If you agree to participate, you will be required to fill a paper-based survey questionnaire covering the above areas that will take a few minutes.

V) Risks or Disadvantages Associated with Participation

There are no personal risks associated with participating in this study. It only involves your reflection on the major questions mentioned on section III above. Should any questions cause you concern, you are free not to answer them. You will not be asked to provide any personal information and personal records.

VI) Benefits Associated with Participation

No promise or guarantee of benefits is made to encourage you to participate in the study. The benefits of participating in this research may be the opportunity this would create for you to reflect back and share your experiences. If you would like a copy of the results from this research, please let one of the researchers know about it by the indicated e-mail address and it will be provided to you at the conclusion of the research.

VII) Extent of Anonymity and Confidentiality

A pseudonym will be assigned for a participating organization/company to ensure its anonymity. Moreover, no personal identifiable information is being collected from you and all information you provide will be combined and analyzed with other respondents' data and results will be primarily used to write up the PhD Thesis. Responses will be kept confidential at all times, and only the members of the research team will have access to the data.

VIII) Rights as a Participant

Your participation in this research is completely voluntary. As a participant, you have the right to withdraw your participation at any time. If you choose to no longer participate, there will be no repercussions to you. Your responsibilities are only to answer the survey questions.

IX) Contact Address

If you have any questions regarding this research, please contact either the researcher or one of his supervisors at the address given on page 1(one) of this information sheet.

If you agree to participate, please complete the paper based survey questionnaire and return it to the investigator.

Yours Sincerely,
Solomon Abebe
PhD. Candidate
Information Systems Track
IT Doctoral Program
Addis Ababa University
Tel: +251913683640
E-mail: Selemonabe@yahoo.com

Appendix 5: List of publications

- Nurye, Solomon Abebe; Desta, Temtim Assefa; and, *Mengiste, Shegaw A.* (2020) "Perceived Benevolence Trust, Perceived Competence Trust, and Onshore Information Systems Development Project Success: The Mediating Effect of Knowledge Transfer," *ICDS 2020 : The Fourteenth International Conference on Digital Society.*
- Nurye, Solomon Abebe.; Molla, Alem; and Desta, Temtim Assefa (2019) "Factors Influencing Knowledge Transfer in Onshore Information Systems Outsourcing in Ethiopia," *The African Journal of Information Systems: Vol. 11 : Iss. 4 , Article 2.*