

**MANAGERIAL COMPETENCIES FOR INFORMATION SYSTEMS
OUTSOURCING PROJECT SUCCESS: DEVELOPMENT OF A
THEORETICAL MODEL AND A PROPOSED EMPIRICAL
INVESTIGATION FRAMEWORK**

by

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ABSTRACT

This study examines the link between managerial competencies and Information Systems outsourcing (ISO) project success under different types of outsourcing relationships. At present, ISO is a multi-billion dollar industry, and has spawned a new industry related to the management of outsourcing contracts. At the micro-level, ISO offers firms economic, strategic, and technical benefits. Various academic and industry publications have observed the critical importance of managerial competencies in influencing ISO project success. Yet, research that investigates the relationship between managerial competencies and ISO project success is scant.

In this study, we developed a theoretical model along with a set of propositions that can be empirically tested. The model and propositions are based on theories that stem from economics (*Transaction Cost Economics* and *Agency Theory*), strategic management (*core competence*, and *Resource-based View*), and social (*Relational Exchange Theory* and *Social Exchange Theory*) perspectives. We also proposed an investigation framework utilizing the case study approach to guide future empirical studies.

Our theoretical model and propositions indicate different patterns of managerial competencies for the client and vendor project managers within the different types of ISO relationships. Apart from an empirical study based on our theoretical model and propositions, future research can adapt and/or extend the model to study knowledge residing in other project stakeholders such as project directors, or to study other outsourcing context such as offshore outsourcing projects.

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CHAPTER 1: INTRODUCTION

Information Systems Outsourcing (ISO) refers to an organization's decision to turn over all or part of its Information Systems (IS) function to third-party vendor(s) in order for the organization to achieve its goals (Cheon et al. 1995). ISO has been an important and growing phenomenon for the last 20 years. In 1989, Eastman Kodak announced that it was outsourcing its IS function to IBM, DEC and Businessland at a cost of USD\$1 billion. This announcement created a stir in the Information Technology (IT) field not only due to the exorbitant amount involved, but also to the fact that a well-known company was turning over its strategic assets¹ to third party providers (Dibbern et al. 2004). Industry pundits raised the following questions: Would the vendors be able to provide the level of services as required or expected by Eastman Kodak? Would Eastman Kodak be able to achieve its organizational goals through outsourcing? How would the external vendors capture the complicated processes in their client organization? And was this somehow a reflection of an organizational view that IT/IS is not part of an organization's strategic assets?

Despite these concerns, firms worldwide have jumped onto the ISO bandwagon. These include: Delta Airlines, Xerox, Chevron and Bell South from the United States; Lufthansa and Deutsche Bank from Germany; Rolls Royce, British Petroleum and British Aerospace from the United Kingdom; Swiss Bank from Switzerland; Canada Post from Canada; Telestra, LendLease and Commonwealth Bank of Australia from Australia. Starting from the early 1990s, ISO has become a global phenomenon.

¹ Strategic assets refer to the resources available after an organization has cautiously spent what it must to keep its existing business operating at its current level (Haag et al. 2006). Strategic assets are important to an organization because they are typically used to fund ventures that will ensure the organization remains competitive.

1.1 Importance of ISO

The economic value of ISO continues to increase dramatically. In 1990, the ISO market was worth a modest USD\$3 billion (Lacity & Willcocks 2006b). In 2004, the market swelled to USD\$200 billion (Lacity & Willcocks 2006b), with a projected growth of 3.3% annually until 2009 (Lacity & Willcocks 2006a). Apart from its volume, the scope of ISO has also expanded. The first half of the early 1990s witnessed the outsourcing of data centers and network management, while the second half reported the outsourcing of application development, Internet development and Enterprise Resource Planning² (ERP) (Goles & Chin 2002). In the new millennium, the trend included netsourcing³ (Lacity & Willcocks 2006b) and IT-enabled Business Process Outsourcing⁴ (BPO) (Borman 2006).

Additionally, the growth of ISO has spawned a new industry related to the management of outsourcing contracts. Numerous consulting firms provide services in the form of contract monitoring, benchmarking, auditing and negotiation. The Gartner Group reported that the outsourcing contract management market grew from a meagre USD\$150 million industry in 2002 to a whopping USD\$20 billion in 2007 (Dibbern et al. 2004). As

2 Enterprise Resource Planning (ERP) refers to the integration of all departments and functions throughout an organization into a single IT system (Haag et al. 2006). An ERP system enables employees to make enterprise wide decisions by viewing enterprise wide information on all business operations. An organization is also able to consolidate its accounting information, receive more accurate financial reports, as well as offer better and faster services by streamlining its processes.

3 Netsourcing refers to a specific type of outsourcing arrangement where the client “rents” a particular IS function, and the service is delivered by the vendor over the Internet or other networks.

4 Business Process Outsourcing (BPO) refers to the “contracting of a specific business task, such as payroll, to a third-party service provider” (Haag et al. 2006, p. 518). The business task being outsourced typically employs IT to facilitate the process (i.e., IT-enabled).

firms engage in more sophisticated forms of outsourcing – offshoring⁵, multiple vendors⁶, and strategic alliances⁷ – the contract management industry will continue to flourish.

ISO could have significant positive as well as negative impacts on the individual client firms. A successful ISO venture could possibly translate into strategic (e.g., focus on core business, exploit new technologies, prompt response to IT needs), economic (e.g., costs savings, generate a positive cash flow) and technical (e.g., access to expertise, technology and better quality services) advantages (Baldwin et al. 2001). In short, ISO could enhance a firm's overall performance and competitiveness.

The previous discussions attest to the importance of ISO. At the macro level, the outsourcing landscape is perpetually expanding in terms of volume and scope. Firms of varying sizes, industries, geographic locations and requirements are involved in ISO activities. Furthermore, ISO has initiated outsourcing contract management services, which is at present a billion dollar industry. Meanwhile, at the micro level, ISO promises strategic, economic and technical benefits to individual firms. All indications are that ISO is a major economic driver and will continue to be so in the future.

⁵ Offshoring or offshore outsourcing refers to “using organizations from developing countries to write codes and develop systems” (Haag et al. 2006, p. 525).

⁶ Multiple outsourcing refers to an organization employing multiple service providers to meet their outsourcing needs (Dibbern et al. 2004).

⁷ Strategic alliance refers to an outsourcing relationship where the client and vendor are involved in a long-term contract. The client relies on the vendor to handle important core IS functions. It is also common for the client organization to invest or “buy” a stake in the vendor company to ensure that both organizations share common objectives (Kishore et al. 2003).

1.2 Problem Statement

Unfortunately, not all ISO projects are successful⁸. A market study by the Deloitte Consulting Group (DCG) for the year 2004 shows that 20% of ISO projects fail in the first two years, and 50% eventually fail within five years (Calling a Change in the Outsourcing Market Report, 2005). A rough estimate of the monetary cost for ISO project failure during 2004 alone is a staggering USD\$25 billion. More troubling is the fact that this value is only based on failed projects that received media attention.

The DCG also observed the following figures:

- 45% of the respondents believe that firms should not outsource processes that it does not fully understand. Outsourcing is viewed as too risky because of the difficulty in defining and explaining those processes to external vendors.
- 62% of the respondents stated that managing ISO relationships requires more effort than anticipated. Meanwhile, 17% of the respondents have added or are planning to add more resources to manage ISO relationships.
- 40% of the respondents had to deal with the challenges of re-organizing roles and responsibilities, and changing or raising their skill sets to manage ISO projects.

The statistics above show that the main obstacle to ISO project success is related to managerial competencies (knowledge and skills). In most cases, these competencies are required to facilitate the communications and manage the client-vendor relationships.

Academic research has also noted managerial competencies as a primary concern in ISO. Feeny et al. (2006) observe that competent project managers influence ISO project

⁸ IS projects in general are prone to failure. A recent report by the Standish Group shows that 19% of IS projects failed (i.e., abandoned altogether) and 50% of IS projects are challenged (i.e., delayed in terms of scheduling, went over-budget, or/and did not meet client's requirements or expectations) (Chaos Report, 2006).

outcomes and determine the status of client-vendor relationships. The results from ISO risks studies attribute lack of expertise and experience in managerial activities as a factor in project failures (Taylor 2007; Aubert et al. 2005; Curie 2003; Schmidt et al. 2001; Earl 1996). Examples of these managerial activities are managing contracts, managing client-vendor relationships, facilitating requirements gathering, and monitoring scope. We can therefore summarize that both academic findings and industry reports attribute managerial competencies (or lack of) as the reason behind poor ISO outcomes.

1.3 Research Motivation & Goals

Previous work on ISO competencies focuses on firm-level analysis (Feeny et al. 2006; Peppard & Ward 2004; Levina & Ross 2003; Goles 2001; Feeny & Willcocks 1998; Mitchell & Fitzgerald 1997). Research on individual-level competencies is scant and fragmented. Available work focuses on specific areas of competencies such as project management (Bullen et al. 2007; Erickson & Ranganathan 2006; Karlsen & Gottschalk 2006; Shi et al. 2005) or technical knowledge (Bullen et al. 2007). Thus far, no study has developed a comprehensive inventory of ISO managerial competencies by integrating results from prior studies, or taken a holistic approach by considering all the relevant dimensions of competencies.

Despite the prevalent industry and academic observations on the link between managerial competencies and ISO project success, researchers have not conducted any rigorous empirical test on this relationship. The inclination in individual-level ISO competencies studies is to compare between different groups of workers. Examples include comparing the managerial competencies required for ISO versus in-house projects (Karlsen

& Gottschalk 2006), or for managers versus technical workers (Bullen et al. 2007). The results are based on perceptions of importance as rated by the respondents.

Our study is motivated by the general importance of ISO in current businesses, the observations of the critical influence of ISO managerial competencies to project outcomes, and the gaps in existing ISO literature. Our primary goal is to develop a theoretical model delineating the relationship between managerial competencies and ISO project outcomes. We include the competencies required by the client and vendor firms, and offer a set of propositions supported by sound theoretical justifications to explain the relationship. Meanwhile, our secondary goal is to provide a framework to guide empirical testing. The findings from future empirical work based on our model and framework will have further theoretical as well as managerial implications.

1.4 Organization of the Thesis

This thesis is comprised of six chapters. Chapter 1 presents an overview of the importance of ISO, research problem, as well as research goals and contributions. Chapter 2 reviews prior ISO literature. We focus our review to cover past studies containing knowledge elements or constructs. Chapter 3 presents the theoretical foundations, which forms the basis for the theoretical model and propositions developed in Chapter 4. We outline our proposed framework to guide future empirical testing in Chapter 5. The final chapter, Chapter 6, discusses the contributions of this thesis, and the suggestions for future research work.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a review of knowledge-related studies in ISO literature. Our review focuses on knowledge-related ISO studies⁹, as opposed to a broader review of ISO literature, since we view these studies as more relevant in developing our theoretical model. First, we present the different theoretical perspectives utilized in prior research. Next, we examine the roles of knowledge in them guided by the Knowledge Management ontology by Holsapple & Joshi (2004). We conclude this chapter with a discussion concerning the gaps in prior research.

2.1 Theoretical Perspectives Utilized in ISO Studies

The three major theoretical perspectives in knowledge-related ISO literature include: *economics*, *strategic management*, and *social* perspectives. For each theoretical perspective, we elaborate on the theories that are relevant to our theoretical model and propositions.

2.1.1 Economics Perspectives of ISO

Two of the theories commonly utilized in ISO studies originate from economics. *Transaction Cost Economics* (TCE) and *Agency Theory* argue that hierarchies are more efficient than markets in producing goods and services. The underlying assumptions are that organizations and individuals are self-interested and will behave opportunistically. TCE focuses on organizational boundary, and promotes firms to consider three attributes in

⁹ We define knowledge-related ISO studies as those that discuss knowledge at the micro-level as well as macro-level (i.e., as competence and capabilities). Knowledge is viewed as a key indicator of competence and capability (Bassellier & Benbasat 2004). Competence refers to the ability of an individual or firm to apply a set of knowledge to achieve a desired objective, while capabilities refer to the strategic application of competence (Peppard & Ward 2004).

a market exchange – asset specificity, behavioural uncertainty and transaction frequency (Ye 2005).

In TCE, a firm's assets are the resources it requires to maintain operations or gain competitive advantage. TCE considers knowledge as part of a firm's resource or asset. *Asset specificity* in market exchange refers to the characteristic of a firm's resource. The more specialized the resource, the higher the degree of asset specificity. As such, *the more specialized the knowledge, the higher the degree of asset specificity*. The concept of asset specificity in ISO research refers to knowledge, as opposed to other types of assets, and is often used as a construct in examining the decision-making stage of ISO (i.e., make-or-buy decisions, motivation for outsourcing, and scope of outsourcing). Generally, asset specificity is negatively correlated to ISO. The findings from make-or-buy and scope of outsourcing research topics indicate that ISO is preferable compared to in-house development when asset specificity is low (Goo et al. 2007; Aubert et al. 2004; Poppo & Zenger 1998); while the findings from motivation for outsourcing research topic stipulate that firms are more motivated to outsource IS functions with low asset specificity (Loebbecke & Huyskens 2006; Qu & Brocklehurst 2003).

An important aspect of asset specificity is that it “requires significant relationship-specific investments in physical and/or human assets that are non-redeployable to alternative uses or users” (Poppo & Lacity 2002, p. 255). For example, an information service provider may customize an application to fit the client's environment. Meanwhile, the client may need to develop a unique understanding of the vendor's procedures, approach and language to effectively utilize the vendor's application. Qu and Brocklehurst (2003) asserts that outsourcing IS functions with high asset specificity requires high degree

of information requirements, operating procedures, business domain knowledge, training for developers, and technical skills. Both client and vendor firms need to spend considerable amount of time and resources to fulfill all of these requirements. Therefore, outsourcing high asset specificity IS functions is considered as difficult and costly.

However, once the decision to outsource IS functions with high asset specificity is made¹⁰, firms need to establish ISO governance¹¹. Higher degree of asset specificity results in a more complex contracting environment, and a greater need for adjustments to be made after the relationship has begun and commitments have been made (Holmstrom & Roberts 1998). Internal governance, which is a hierarchical relationship where the client has formal control over both sides of the transaction, is presumed to be more efficient in resolving potential disputes. Therefore, to guarantee that knowledge with high asset specificity remains under internal governance is the driving force behind ISO governance studies (Rustagi et al. 2008; Aubert et al. 2005).

Agency Theory is an extension of TCE. It incorporates the three attributes of market exchange from TCE, along with the concept of risk aversion and information as a commodity (Ye 2005). Agency Theory extends TCE by focusing on the contract between two parties. The principal hires the agent who has the knowledge and expertise to perform the work. The transactions between the principal and the agent are governed by tight contracts to ensure maximum efficiency. Taylor (2007) and Shi et al. (2005) use Agency Theory to argue for the role of knowledge and expertise in ISO team members.

¹⁰ Firms might decide to outsource IS functions with high asset specificity due to lack of internal technical expertise.

¹¹ ISO governance refers to the arrangements of decision-making authorities in an ISO projects (Sambamurthy & Zmud 1999). The issues related to governance include ISO risks/reward sharing, control mechanisms, and contractual agreements.

2.1.2 Strategic Management Perspectives of ISO

Core competencies are sets of capabilities that provide strategic advantages to firms, and consist of highly specialized knowledge with high asset specificity (Saunders et al., 1997). With core competencies, firms are able to exploit opportunities and neutralize threats in their external environment. The nature of core competencies is that it grows organically through learning, knowledge transfer and information sharing.

Core competencies cannot be enhanced through additional large investments. Client firms that invest heavily in ISO projects involving core competencies might not be able to reap the benefits that commensurate with their investments. The conventional wisdom is that firms should not outsource IS functions related to core competencies, because they are difficult to imitate and transferred to others (Saunders et al., 1997). Furthermore, due to the highly specialized knowledge involved, it is difficult for vendor firms to leverage the knowledge they gain from projects involving core competencies to their other projects (Poppo & Zenger 2002). In conclusion, both client and vendor firms are advised against engaging in ISO projects involving core competencies.

ISO studies related to core competencies follow two streams. The first stream views core competencies as a key driver for ISO (Smith et al. 1998; Currie & Willcocks 1998; Saunders et al. 1997; Collins & Millen 1995; Quinn & Hilmer 1994). These studies attribute a firm's need to focus on their core competencies as a primary factor in the decision to outsource. Firms are inclined toward selective outsourcing, where non-core IS functions are outsourced, and core IS functions remain internal. The second stream focuses

on identifying the core IS/IT competencies for firms¹². These studies identify sets of core competencies for client firms (Willcocks et al. 2005; Peppard & Ward 2004; Feeny & Willcocks 1998), and more recent, a set of core competencies for vendor firms (Feeny et al. 2006).

Resource-based View (RBV) and *Knowledge-based View* (KBV) are the two other theories under the strategic management umbrella. In RBV, a firm is viewed as a distinctive bundle of resources, which can generate competitive advantage for the firm if they are rare, valuable, and irreplaceable. A firm will use internal resources as long as it has the capabilities to do so. However, if deficits of resources such as capabilities occur, then the market will provide an option to bridge these gaps. The relationship between client and vendor firms is regarded as a dependency. In the ISO context, RBV has been used in studies related to decision-making stage as well as performance. One of the most well cited research in contemporary ISO literature employed RBV and the concept of core competence to derive a core capability model for client firms (Feeny & Willcocks 1998). This model outlines the pre-requisite capabilities needed by client firms before embarking on an ISO venture. The identified capabilities are managing vendors, contract monitoring, and informed buying

RBV considers knowledge as a generic resource. On the other hand, KBV views knowledge as the most strategic resource in firms. KBV posits that knowledge is the most important resource in firms because it enables firms to maintain their uniqueness, which in turn is crucial to maintain competitive edge and superior performance. Poppo and Zenger

¹² These studies produce typologies for core IS competencies for firms. These typologies contain competencies, and meta-level competencies (or capabilities) for firms.

(1998) employ RBV and KBV to explain the relationship between asset specificity and a firm's performance.

2.1.3 Social Perspectives of ISO

Other researchers, especially those in the marketing area, have suggested social theories such as the Social Exchange Theory and Relational Exchange Theory as tools for analyzing the client-vendor relationships. These theories assume that participants develop trust and commitment during their interactions. The relationship between client and vendor firms is regarded as a partnership, where both firms have similar and non-conflicting goals. Thus, the Social Exchange Theory and the Relational Exchange Theory are used to study ISO partnership themes (Han et al. 2008; Goo et al. 2007; Goles 2001; Lee 2001; Lee & Kim 1999).

In *Social Exchange Theory* (SET), participants evolve over time as they mutually and sequentially demonstrate their trustworthiness. A firm involved in these interactions must satisfy a requirement, in order to receive benefits from the other firm. For successful ISO projects, a firm must demonstrate efforts of developing and maintaining a good relationship by behaving consistently with the expectations of the other firm. Goo et al. (2007) and Lee (2001) utilize SET to explain knowledge transfer activities during ISO implementation.

Meanwhile, in *Relational Exchange Theory* (RET), firms involved in an exchange are in mutual agreement. The resulting outcomes of the exchange are greater than what would be obtained otherwise. This motivates both firms to consider the relationship important in and of itself, and to devote resources towards the development and maintenance of the relationship. ISO partners should share norms that can increase

relationship ties between the client and vendor firms, and shared norms can be fostered through shared knowledge (Reich & Benbasat 2000). Grounded in RET, Goles (2001) produce a theoretical model linking knowledge to partnership, and partnership to ISO success.

Table 1 summarizes the theories along with their respective studies. Although we did not elaborate on *Psychological Contract Theory* and *Knowledge Management* in our earlier discussion, this table includes a brief summary of both

Table 1: Summary of Theoretical Perspectives in Knowledge-Related ISO Research

| Theory | Theoretical Argument | Related Studies |
|---|--|--|
| Transaction Cost Economics (TCE) | “Firms should consider three attributes of a market exchange – asset specificity, behavioural uncertainty, and transactional frequency – when making the make-or-buy decision. These attributes indicate situations in which opportunities exist for one or both parties involved in a market exchange to behave opportunistically. When opportunism arises, the costs of managing the exchange (transaction costs) increase and the performance of the exchange suffers. IT services can be provided by an external vendor if the costs of providing such services in-house exceed the transaction costs that might incur within the market exchange” (Ye 2005, p. 15). | Poppo & Zenger (1998); Qu & Brocklehurst (2003); Aubert et al. (2004); Aubert et al. (2005); Shi et al. (2005); Loebbecke & Huyskens (2006); Goo et al. (2007); Rustagi et al. (2008). |
| Agency Theory | “The principal delegates the work to the agent who specializes in the work. Agency problem arises when two parties have different goals and it is difficult or expensive for the principal to measure what the agent is doing. The focus of the Agency Theory is on developing the most efficient contract that governs the principal-agent relationship, assuming self-interested people and corporations. One of the most important and most difficult task tasks in ISO is to write and manage the contract that would reduce the risk of agency problem at the lowest level” (Ye 2005, p. 15). | Poppo & Zenger (1998); Aubert et al. (2005); Shi et al. (2005); Taylor (2007). |
| Core Competence | Core competence evolves slowly through collective learning and information sharing. It gives firms an advantage over their competitors because it is difficult to imitate, and in most cases it allows firms to exploit opportunities or neutralize threats in their external environments. In general, firms are advised to avoid outsourcing functions involving their core competence since knowledge related to core competence is difficult to transfer between client and vendor firms. Firms are instead advised to only outsource functions involving their non-core competence. | Quinn & Hilmer (1994); Collins & Millen (1995); Saunders et al. (1997); Currie & Willcocks (1998); Feeny & Willcocks (1998); Smith et al. (1998); King & Malhotra (2000); Baldwin et al. (2001); Lee (2001); Levina & Ross (2003); Peppard & Ward (2004); Willcocks et al. (2005); Feeny et al. (2006); Willcocks et al. (2006). |
| Resource-based View | “A firm is viewed as a distinctive bundle of resources, which can generate competitive advantage for the firm if they are rare, valuable, irreplaceable, and inimitable. A firm will use market competence as long as it can generate capabilities using internal resources. However, if deficits in resources and capabilities are diagnosed on the firm's strategic orientation, then market becomes an option to fill these gaps” (Ye 2005, p. 15). Firms may need ISO if it lacks technical staff, advanced technology, or technical capabilities internally. | Feeny & Willcocks (1998); Roy & Aubert (2002); Peppard & Ward (2004); Erickson & Ranganathan (2006); Han et al. (2008). |

| Theory | Theoretical Argument | Related Studies |
|--------------------------------------|---|---|
| Knowledge-based View | Knowledge is the most strategically significant resource of a firm. This is because knowledge-based resources are difficult to imitate and socially complex. Therefore, knowledge bases are the major determinants of competitive advantage among firms. Although the resource-based view of the firm recognizes the importance of knowledge, the resource-based view treats knowledge as a generic resource, rather than having special characteristics. The primary motivation for ISO involves gaining knowledge that is not available internally. | Poppo & Zenger (1998) |
| Relational Exchange Theory | “Processes evolve over time as participants mutually and sequentially demonstrate their trustworthiness. Parties involve in social interactions where one party is obligated to satisfy a requirement, in order to receive benefits from the other party. The information processing of the other party is tuned to the demands that originated from these interactions” (Ye 2005, p. 16). For successful ISO relationships, both parties should demonstrate efforts of developing and maintaining good relationship by behaving consistent with the expectations of the other party. | Goles (2001) |
| Social Exchange Theory | “Parties involved in the exchange are in mutual agreement that the resulting outcomes of the exchange are greater than what would be obtained otherwise, which motivates both parties to consider the relationship important in and on itself, and to devote resources towards the development and maintenance of the relationship. It is characterized by the presence of norms associated with the creation, preservation, and harmonization of the relationship between the exchange partners” (Ye 2005, p. 16). Partners involved in an ISO relationship should share norms that are designed to enhance the well being of both partners, in order to get the best value. | Lee (2001); Goo et al. (2007); Han et al. (2008). |
| Psychological Contract Theory | A psychological contract is part of an individual’s belief system, influenced by the organization, regarding the terms of an exchange agreement between the individual and their organization or another party. The concept of the psychological contract is based in social exchange theory, implying some mutually understood reciprocal agreement. The behaviours of the two parties are critical to the process. In ISO, the psychological contract theory is used to study the commitment among vendor employees who are contracted (outsourced) to the client firms. | Koh et al. (2004); Thomson & Venable (2006). |
| Knowledge Management | Knowledge management represents the activities engaged by firms to identify, create, represent, distribute, enable, and adopt what it knows, and how it knows it. ISO is seen as a series of knowledge management process; typically involving knowledge sharing and knowledge transfer between client and vendor firms, as well as inter-organizational knowledge integration. | Lee (2001); Levina & Ross (2003); Koh et al. (2004); Tiwana (2004a); Shi et al. (2005); Chua & Pan (2006); Willcocks et al. (2006); Tiwana & Keil (2007); Wu et al. (2007). |

2.2 Roles of Knowledge in ISO Literature

We adopt the Knowledge Management (KM) ontology (Holsapple & Joshi 2004) to analyze the roles of knowledge in ISO literature. The KM ontology enables us to view knowledge in several ways – *knowledge as a factor influencing decisions in the early stages of ISO*, *knowledge as a required resource to execute ISO activities*, and *knowledge as a factor influencing ISO governance*. Furthermore, each ISO project is seen as a KM episode with *KM activities*¹³ and *outcomes*. ISO outcomes include *learning* and *performance*. We like to note here that learning does not imply best practices such as best practices for ISO governance or vendor selection. Instead, learning refers to the knowledge created and gained by client and vendor firms during ISO activities. Figure 1 exhibits the relationships among the different roles, as well as the ISO research topics and the prominent theories associated to each role.

2.2.1 Knowledge as a factor that influences decisions in the early stages of ISO

In general, early ISO studies focus on the initial stages of ISO such as make-or-buy decisions, motivation, and scope. The key drivers of ISO are identified and categorized as economic, technical, and strategic (Loebbecke & Huyskens 2006; Baldwin et al. 2001). In the economic category, studies show that we must outsource functions with low asset specificity (Loebbecke & Huyskens 2006; Qu & Brocklehurst 2003). ISO enables client firms to gain access to technical expertise for technical advantage (Beimborn et al. 2005; Baldwin et al. 2001; DiRomualdo & Gurbaxani 1998; Smith et al. 1998; Collins & Millen

¹³ A KM activity is a process that involves knowledge flows between senders and receivers. Examples of KM activities: knowledge transfer, knowledge sharing, and knowledge acquisition (Hosapple & Joshi 2004).

1995; McLellan et al. 1995) and focus on core competencies for strategic advantage (Smith et al. 1998; Quinn & Hilmer 1994).

After the decision to outsource is made, client firms need to consider the optimal mode of outsourcing. The characteristics of knowledge embedded in the outsourced functions (i.e., asset specificity, degree of business skills requirements, and degree of technical skills requirements) are used to determine the most suitable type of ISO relationships (Roy & Aubert 2002; King & Malhotra 2000; Currie & Willcocks 1998), and the scope of ISO (i.e., *what to outsource*) (Aubert et al. 2004).

Michell and Fitzgerald (1997) propose a set of criteria to help client firms during the vendor selection process. One of the criteria for selection is vendor capabilities, which entail the vendor's "ability to offer a vertically integrated range of services on their core IT background" (p. 229) along with prior experience or track record in providing related services.

The theories utilized for studies under this category are diverse. Researchers apply theories originating from economics (TCE, Agency Theory), strategic management (core competence, RBV, and KBV) and social (SET) perspectives. Some studies combine multiple theories from different perspectives to develop comprehensive research frameworks (Loebbecke & Huyskens 2006; Poppo & Zenger 1998).

In short, the studies within this category address issues related to the early stages of ISO – motivation, mode, scope, and vendor selection process. The theoretical justifications stem from various fields.

2.2.2 Knowledge as a required resource to execute ISO activities

The second group of studies views knowledge as a required resource to execute ISO activities, and ultimately, to ensure success. We find two streams of studies under this particular category – studies examining knowledge at the *individual level*, and studies examining knowledge at the *collective level* (teams and firms).

At the *individual level*, almost all studies focus on managerial-level knowledge in client firms (Bullen et al. 2007; Franke & Gewald 2006; Erickson & Ranganathan 2006; Karlsen & Gottschalk 2006; Shi et al. 2005). Thus far, only Goles et al. (2008) conducted a study to identify the relevant knowledge for managers and entry-level technical staff in vendor firms. The findings in all of these studies are fragmented; each covering various areas of knowledge such as project management, technical, and communication.

An apparent trend in the studies of knowledge at the individual level is the focus on differentiating between groups of workers (e.g., knowledge in ISO managers versus knowledge in internal managers). Only Erickson and Ranganathan (2006) provide a research framework to link knowledge to ISO project success. However, the authors focus on project management competencies, and did not make any theoretical justification in linking knowledge to ISO project success.

At the *collective level*, previous studies identify the areas of knowledge pertinent to client firms either inductively via theoretical argument (Peppard & Ward 2004) or deductively via the case study approach (Baldwin et al. 2001; Feeny & Willcocks 1998). The areas of knowledge are those that are specific to ISO such as managing supplier, monitoring and facilitating contract, and selecting vendors. Willcocks et al. (2006) conducted a longitudinal case study based on their earlier work (Feeny & Willcocks 1998)

to identify the relative importance of the different areas of knowledge based on firm size. A managerial implication of this study is that firms are able to identify areas of knowledge most relevant to them.

Prior studies also investigated the areas of knowledge in vendor firms (Feeny et al. 2006; Levina & Ross 2003; Michell & Fitzgerald 1997). Michell & Fitzgerald (1997) and Feeny et al. (2006) identify areas of knowledge in vendor firms that enable them to successfully complete ISO projects. The areas of knowledge encompass the knowledge required to deliver the product, improve client firms' current IT assets and services, as well as manage client-vendor relationships. The authors offer the results of their studies as toolkits for client firms during the vendor selection process.

Meanwhile, Levina and Ross (2003) conducted a single longitudinal study following a successful vendor firm. The successful outcomes of the ISO projects in this particular firm are attributed to "the economics benefit derived from the ability to develop a complementary set of core competencies" (p. 331) – IT personnel career development, client relationship management, and methodology development and dissemination. In addition, the vendor shares these core competencies to its clients through formal and informal channels. Thus, the vendor provides a learning avenue to its clients and enhances the client-vendor relationships.

Some researchers develop and test frameworks to determine the relationships between knowledge and partnerships, as well as partnerships and ISO outcomes (Han et al. 2008; Taylor 2007; Goles 2001; Lee 2001). All of these studies find significant positive relationships between knowledge and partnerships, as well as partnerships and ISO outcome.

Similar to the first category (Section 2.1.1), the theories utilize in this category are also diverse. Despite the heterogeneity, almost all studies make references to core competencies.

2.2.3 Knowledge as a factor that influences the mode of ISO governance

ISO arrangements are established and maintained through governance. Prior studies in ISO governance address risks, controls, and contractual issues. In this section, we discuss the role of knowledge as a factor that influences the mode of ISO governance.

Client firms encounter several knowledge-related risks in ISO. The first two risks involve the loss of opportunity to gain knowledge – the loss of organizational opportunity to (1) learn technical skills, and (2) learn how to exploit technology to gain competitive advantage (Earl 1996). The third risk is the lack of knowledge in both the client and vendor firms to successfully engage in ISO (Aubert et al. 2005). Meanwhile, Taylor (2007) discovers that skills and staff mismatch is a knowledge-related risk to vendor firms. All of these studies propose an active risk management approach such as selective ISO¹⁴ to reduce risks exposures. These studies refer to both theories – TCE and Agency Theory – from economics.

Tiwana and Keil (2007) tested the relationship between cross-domain knowledge¹⁵ and control methods in ISO¹⁶. They found that formal control method is suitable when the cross-domain knowledge in both client and vendor firms is high. However, a recent study

¹⁴ Selective ISO refers to clients outsourcing their IS functions on a case-by-case basis. For example, outsourcing only non-core IS functions while core IS functions remain in-house.

¹⁵ Cross-domain knowledge in ISO refers to the client firms having technical knowledge, and the vendor firms having business knowledge.

¹⁶ Tiwana and Keil (2007) used the term *peripheral knowledge* in their study.

by Rustagi et al. (2008) found that clients with high technical knowledge (a cross-domain knowledge) and relationship management knowledge tend to exert less formal control. If we take the results of both studies into consideration, there is an apparent mismatched between the most effective form of control mode required in ISO projects and the actual control mode being applied by firms.

Lastly, we have studies asserting that the characteristics of knowledge embedded in the outsourced IS function should determine the manner of contractual agreement between firms (Miranda & Kavan 2005; Saunders et al. 1997). ISO projects involving highly specialized knowledge must be governed by tight contractual agreements. Poppo & Zenger (1998) asserts that tight contractual agreements are necessary to induce firms to make highly specialized investments (since highly specialized knowledge is difficult to leverage in other settings). Client firms especially, must be thorough in negotiating outsourcing contracts to guarantee control over the vendors; this in turn, restricts the client firms' vulnerabilities (Saunders et al. 1997). In contrast, ISO projects involving more generic knowledge can be successful even though they are governed by loose contractual agreements. The risks for outsourcing projects with generic knowledge are less; and therefore, control is less of an issue.

2.2.4 Knowledge-related activities in ISO

Another group of studies investigate knowledge-related activities during an ISO engagement. These activities incorporate knowledge flows between client and vendor firms. An early study by Goles (2001) establishes the positive relationship between knowledge and intra-firm communications; and the positive relationship between intra-firm communications and ISO partnerships. By utilizing RET, Goles (2001) examined the

relationships from both the client and vendor perspectives. Han et al. (2008) tested a similar framework on client firms in Korea and achieved similar results.

More recent studies however, view knowledge flows via the KM perspectives (Tiwana 2004a; Tiwana 2004b; Ko et al. 2005; Goo et al. 2007). The authors examine the relationships between the degrees of knowledge in ISO team members to several KM activities such as knowledge sharing¹⁷ and knowledge acquisition¹⁸. In all cases, positive relationships are established between the degrees of knowledge and KM activities.

Other studies under this rubric examine the relationship between KM activities and ISO outcomes. Thus far, the results from these studies are cohesive, in that the degree of a KM activity positively correlates to ISO project success (Chua & Pan 2006; Goles 2001; Lee 2001).

2.2.5 Knowledge and ISO Outcomes

Previous studies usually address knowledge and ISO outcomes in term of performance. We omit discussions of these studies in this section since we have reviewed them previously (Section 2.2.1 - 2.2.4).

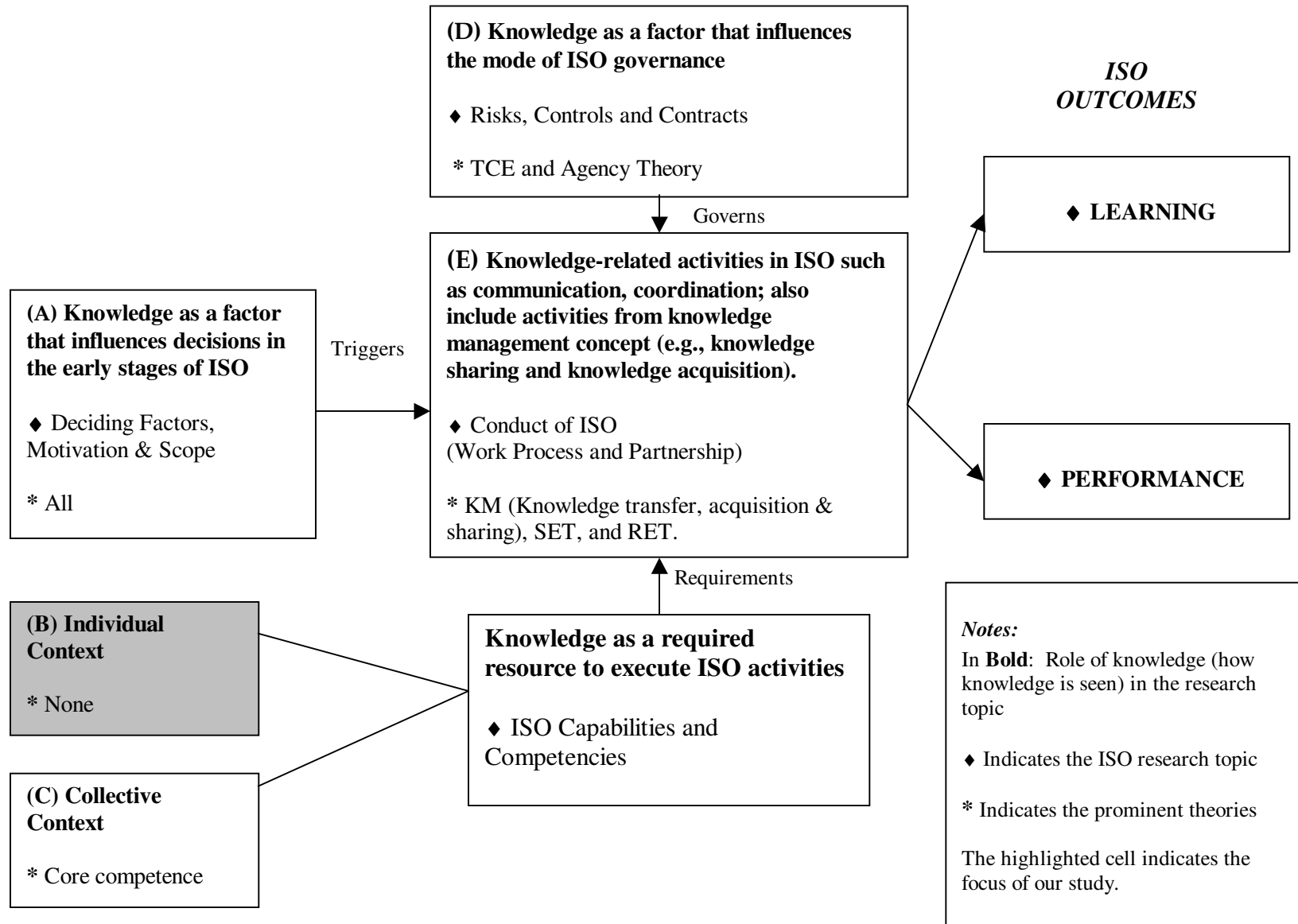
We identified only three studies discussing learning as part of an ISO outcome. Wu et al. (2007) created an instrument to capture the extent of learning in client firms. Meanwhile, Willcocks et al. (2006) and Levina & Ross (2003) concluded that client and vendor firms learn from each other during ISO engagements. Interestingly, both studies

¹⁷ Knowledge sharing is defined “as activities of transferring or disseminating knowledge from one person, group, or organization to another” (Lee 2001, p. 324).

¹⁸ Knowledge acquisition is defined as “identifying knowledge in the entity’s environment and making it available in a suitable representation to an appropriate activity” (Hosapple & Joshi 2004, p. 601).

noted that firms are unable to fully leverage the knowledge they gain for competitive advantage.

Figure 1: Framework to Analyze the Roles of Knowledge in ISO Literature



2.3 Gaps in Prior Research

Our literature review proves that the role of knowledge as a factor influencing decisions in the early stages of ISO is extensively explored (A in Figure 1). This category contains the highest number of studies associated to it, and utilizes theories from various theoretical perspectives. Therefore, we cannot detect any interesting avenue for future research topic under this category.

Nevertheless, our review reveals several gaps in contemporary ISO research. These gaps are:

- *Knowledge as a required resource under the individual context (B in Figure 1)*

Although several studies fall under this category, there are major weaknesses to them. These are:

- (1) The studies are disparate; covering a wide area of knowledge. In general, the studies do not appear to be “building on top of each other.”
- (2) Previous studies identify the relevant areas of knowledge based on the ratings given by the respondents. The focal point of these studies is to assess the dissimilarities between different groups of workers.
- (3) Most studies are based on client perspectives.

Henceforth, future studies should attempt to address these weaknesses.

- *Knowledge as a required resource under the collective context, KM activities and ISO outcomes (C and E in Figure 1)*

Tiwana (2004a; 2004b), Ko et al. (2005), and Goo et al. (2007) examined the relationships between knowledge and KM activities in ISO projects. Our literature review established that several other KM activities relevant to ISO remain unexplored. Future

research should delve into these unexplored KM activities, which include knowledge selection¹⁹ and knowledge generation²⁰. A comprehensive research framework can be developed to determine the relationships between firm capabilities and one of these KM activities, and between the relationships between the selected KM activity and ISO outcomes.

- *Knowledge in ISO governance (D in Figure 1)*

Current studies view lack of knowledge as a risk. Meanwhile, the characteristic of knowledge embedded in the IS functions being outsourced appear to determine the optimal control methods and contractual agreements between clients and vendors. We believe that there is room for future research in this area especially if we consider the knowledge residing in the agents. For example, future research might investigate how knowledge in ISO managers influences their style of risk management, or if knowledge influences the contractual agreements between clients and their vendors.

- *Learning as part of ISO outcomes*

Research under this area is scant. We therefore believe that a plethora of opportunities exists here. Nonetheless, findings from these studies might prove to be a good starting point.

First, a study by Levina and Ross (2003) establishes that vendor firms with a centralized method of governance are able to develop their core competencies. A question that future research might pose: are client firms able to do the same with centralized governance?

¹⁹ Knowledge selection is the process of “identifying knowledge within an organization’s existing base and providing it in an appropriate representation to an activity that needs it” (Holsapple & Joshi 2004, p. 601).

²⁰ Knowledge generation is the process of “deriving and discovering knowledge in the context of existing knowledge” (Holsapple & Joshi 2004, p. 601).

Second, both Willcocks et al. (2006) and Levina & Ross (2003) noted that client firms are able gain new knowledge during ISO engagements. However, clients are unable to leverage this knowledge for competitive advantage. Some questions to pose here are why, and how do we enable these client firms to fully exploit their new knowledge.

2.4 Chapter Summary

In this chapter, we reviewed both the theoretical perspectives and issues of interests in knowledge-related ISO studies. We present a summary of these studies in Appendix A.

Based on the literature review, we see that the goal of this thesis – to provide a theoretical model and to propose an empirical investigation framework for managerial competencies in successful ISO projects – fills one of the voids in ISO research. As highlighted in Figure 1, our study furthers current understanding of the *role of knowledge as a required resource to execute ISO activities at the individual context*. In Chapter 3 that follows, we discuss the theoretical foundations underlying our theoretical model.

CHAPTER 3: THEORETICAL FOUNDATIONS

This chapter discusses the underlying theoretical foundations for this study. The first section discusses managerial competencies in client and vendor firms. The second section provides an overview of the various types of ISO classifications available in current literature. The third section describes ISO project success.

3.1 Vendor and Client Managerial Competencies

3.1.1 Influence of Competence on Project Management

“California has recently declared another costly computer project a failure, indicating a need for new techniques in developing technology projects. For at least the fifth time in this decade, California’s state government has spent millions of dollars on a failed computer project... To prevent further failures, the state plans to incorporate business solutions such as dividing projects into smaller tasks, *choosing experienced managers*, ...” – Los Angeles Times, July 1999 (Standish Group 2000) [emphasis mine].

One of the most spectacular and widely discussed ISO project failures is the one reported by the California Department of Motor Vehicle (DMV). The California DMV announced the cancellation of an ISO project in 1993 after spending close to USD\$45 million (Standish Group 1994). Ironically, the California State Department declared another failed project in 1999 (above news excerpt). In both cases, California taxpayers were cheated not only out of their hard-earned income, but also of the IT solutions that would have made their lives easier. The failures of these two projects were attributed to several factors – lack of management support, lack of user involvement, unclear project goals, and *poor project management* (Standish Group 2000) [emphasis mine]. Apart from

the California DMV incident, evidence of lack of competence in project management contributing towards negative ISO project outcomes include:

- FoxMeyer Drug Corporation outsourced its R/3 implementation to SAP and Andersen Consulting in 1993. The project was worth USD\$65 million. The project undergone several major changes in terms of requirements, and the cost soared to USD \$ 100 million by 1995. The system implemented in August 1995 was disastrous since it caused warehouse inventory losses worth up to USD\$15.5 million. It is generally accepted that this failed project was a major factor in driving FoxMeyer to file for bankruptcy in August 1996. Scott and Vessey (2002) attribute *lack of strong project management leadership* as one of the significant factors that contributed to the negative outcome.
- Waikato Health Limited (WH) provides services through several large public hospitals in the district of Waikato, New Zealand. In 1998, WH outsourced its IS project to Shared Medical System (SMS). The project was officially terminated in 2003, resulting in a loss of USD\$13 million. Several key members of WH's governing board resigned from their posts or had their services terminated. Gauld (2006) identify several key factors that contributed to the negative outcome. These factors are: political interference in decision-making, lack of understanding on the project risks and requirements, failure to consult with users before and during project commencement, as well as *poor and discontinuity in project management*.
- Prior studies applying the case study method (Hanna & Daim 2007) and the survey method (Han et al., 2008) identify *project management competence* as one of the critical success factors.

Based on all of the evidence, we deduce that project management is a critical factor in determining ISO project outcomes.

The central players in project management are the people who shoulder the responsibilities of planning, coordinating, controlling and managing its activities, namely, the project managers. They are traditionally defined as the “individuals who are the experts in project planning and management, who initiate and develop the project plan, and track the plan to ensure all key project milestones are completed on time” (Haag et al. 2006, p. 526). Aside from managing daily processes, project managers must exhibit *leadership* skills (Bullen et al. 2007; Lee & Lee 2006; Shore 2005; Wu et al. 2004; Mintzberg 1980). For example, they must be able to motivate team members, encourage team building, and liaise with project team members. In ISO projects, the scope of project management goes beyond the boundaries of each of the interacting organizations. The ISO project managers have to coordinate their efforts and maintain good working relationships with the client/vendor firms. Project management risks increase two-fold since risk factors originate from both the vendor and client sides (Taylor 2007). Furthermore, intra-organizational challenges, such as organizational culture differences and technology-mediated modes of communication, can surface. ISO project management is definitely a multifaceted affair, and ISO project managers face great challenges in their work.

Practitioners have recently made calls for ISO project managers to update and re-evaluate their portfolio of competencies (Lacity & Rottman 2008; Lee & Lee 2006; Melymuka 2006). Competence denotes a set of knowledge in a certain area. Bassellier et al. (2001, p. 164) who adopted this view argue that:

“Bridging knowledge into the competence definition broadens the concept by making it dynamic and interactive. This acknowledges that competence is not necessarily linked to a specific task but relates to the ability to transfer knowledge across tasks... Competence is thus non-routine and embodies the ability to cope with complex and changing environments...”

The person who has a particular competence in a given area has the ability to effectively perform the activities related to that area and also continuously adapt as the environment evolves (Quinn & Hilmer 1994). Even though competence does not necessarily imply better performance since the latter requires other attributes such as motivation, effort and supporting conditions, competence is considered to be an essential enabler (Bassellier et al. 2001). Hence, an ISO project manager’s competencies influence his/her performance (Erickson & Ranganathan 2006) and ultimately lead to ISO project success (Lacity & Willcocks 2006a; Willcocks et al. 2006; Feeny & Willcocks 1998).

3.2 Dimensions of Competence

“[IT] Project management requires competencies in three subject areas: technology, business and behaviour.” – Linda Pittinger, CEO of People3 (Melymuka 2000).

We conducted a literature review to identify and ascertain the areas of competencies required for ISO project managers. The review included studies that investigated knowledge requirements for general *IT professionals* in:

- All areas of competencies (Livari et al. 2004; Wu et al. 2004; Todd et al. 1995).
- Specific areas of competencies, such as, business (Bassellier & Benbasat 2004) and communications (Jiang et al. 2003).

We also identified a handful of studies that focused on IT professionals who are involved in ISO activities. The themes covered in these studies included:

- Leadership and project management (Erickson & Ranganathan 2006; Shore 2005; Karlsen et al. 2002).
- General competencies (Bullen et al. 2007) and IT experience (Franke & Gewald 2006).
- Technical, business domain, project management, and sourcing knowledge/skills required in vendor project managers (Goles et al. 2008).

Based on our review, we categorized knowledge requirements of ISO project managers into three distinct areas of competencies: *IT competence*, *business competence* and *leadership*. We adopted the work of Bassellier & Benbasat (2004), Bassellier et al. (2003) and Quinn's (1991) leadership typology to supply the dimensions of business competence, IT competence, and leadership, respectively.

Table 2 shows that the dimensions selected encompass the findings from studies of IT professionals working in ISO environments. Only one new element, *IT standards*, was added as part of IT competence due to findings and legislation concerning the Sarbanes-Oxley Act of 2002. The following sections discuss each aspect of competence in detail.

Table 2: Areas of Competencies for ISO Project Managers and Review of Studies on Knowledge Requirements of IT Professionals in ISO

| Taxonomy of Areas of Competencies for ISO Project Managers | | | Goles et al. (2008) | Bullen et al. (2007) | Franke & Gewald (2006) | Erickson & Ranganathan (2006) | Karlsen & Gottschalk (2006) | Shi et al. (2005) |
|--|----------------------------|-----------------------|--|--------------------------------------|------------------------|-------------------------------|-----------------------------|---|
| Business | Organizational Overview | Organization Specific | Industry Knowledge | | | | | |
| | Organizational Units | | Functional Area Knowledge | | | | | |
| | Project Responsibility | | | | | | | |
| | IT-Business Integration | Project Integration | | | | | | |
| | Knowledge Networking | Interpersonal | Communication; Working with Teams. | | | | | |
| Interpersonal Communication | | | | | | | | |
| IT | Technology | IT Knowledge | IT Architecture | IT Architecture; Security; Database. | | | | Informed Buying (client-vendor technical compatibility) |
| | Applications | | | | | | | |
| | System Development | | System Analysis & Design | System Analysis & Design | | | | |
| | IT Management | | | | | | | |
| | Access to IT Knowledge | | | | | | | |
| | IT Standards ²¹ | IT Standards | IT Standards | | | | | |
| | Project Experience | IT Experience | | | | | | |
| IT Management Experience | | | | | | | | |
| Leadership | Mentor | Human Relations | Planning; Leadership; User management; Risk management; Negotiation. | Project Management | | Team Responsibilities. | Management Roles | Contract Facilitation; Monitoring; Vendor Development. |
| | Facilitator | | | | | | | |
| | Monitor | Internal Process | | | | | | |
| | Coordinator | | | | | | | |
| | Director | Rational Goal | | | | | | |
| | Producer | | | | | | | |
| | Broker | Open Systems | | | | | | |
| Innovator | | | | | | | | |

²¹ Newly added element incorporated in lieu of recent findings and legislation concerning the Sarbanes-Oxley Act of 2002.

3.2.1 Business Competence

The ISO project manager's position is an intersection of the business and technical functions (Lacity & Willcocks 2006a). Numerous practitioners report the significance of business competence in ISO project managers. Melymuka (2006) for example, quoted a vice president of IS for a major hotel chain as saying that for ISO project managers "technical skills are a given... but we need a certain amount of business acumen..." Business acumen here refers to the ISO project managers' abilities to understand the organizations' cultures and processes, as well as communicate with staff internal and external to the base organization (i.e., business competence).

We integrated the business competence construct put forward by Bassellier & Benbasat (2004) into our competence taxonomy. Their business competence construct reflects IT professionals' *organization specific* knowledge and *interpersonal communication* skills. We revised a few of the elements under the organization specific dimension, namely organizational overview, organizational units and project responsibility²². Changes were made to accommodate the intra-organizational aspects of outsourcing environments. In summary, these specific adjustments are:

- *Organizational overview* refers to knowledge related to the *client's organization*.
- *Organizational units* refer to knowledge related to the *divisions within the client organization that are affected by the outsourcing project*.
- *Project responsibility* refers to the impact of the project on the *client organization*.

In this taxonomy, we emphasize business knowledge on the *client side* as opposed to generic business knowledge since this is the environment in which ISO applications

²² Originally referred to as *organizational responsibility* in Bassellier & Benbasat (2004).

are built. Understanding the environment of the IS application is a crucial factor in ensuring its success (Livari et al. 2004). Although numerous anecdotes from practitioners reported the significance of project managers having organizational overview, organizational units and project responsibility knowledge elements (Melymuka 2006; Melymuka 2000); surprisingly, these have never been investigated in academic research.

Another important component of business competence is *IT-business integration*. This is defined as the ability to create synergy between IT and business by integrating IT into business capability to solve organizational problems and increase performances (Bassellier & Benbasat 2004). In short, IT professionals must know how to be able to exploit technology for business benefits. A series of studies by Willcocks and associates found IT-business integration to be a vital asset in determining outsourcing success (Lacity & Willcocks 2006a; Willcocks et al. 2006; Feeny & Willcocks 1998). These studies examine IT-business integration at the organizational level. In contrast, Bullen et al. (2007) investigated IT-business integration at the granular level, in ISO project managers. They refer to this element as project integration and show based on empirical evidence that it is a primary skill requirement in ISO project managers.

The second dimension in business competence is *interpersonal communication*. In general, interpersonal communication skills have long been sought after in IT professionals at all levels (Jiang et al. 2003). In an exploratory study, Erickson and Ranganathan (2006) discovered that ISO project managers must be able to communicate with their team members as well as clients/vendors. Unlike the original work by Bassellier & Benbasat (2004) that included leadership as part of interpersonal communication, we extracted the leadership element from business competence and

propose it as another set of competence for ISO project managers (Section 3.2.3). The leadership element by Bassellier & Benbasat (2004) covers project management activities (e.g., managing the scope, time, and cost of a project), managing organizational change, managing project risks, and establishing project direction. Recent studies have reported the significance of other skills such as negotiating²³, brokering²⁴, and mentoring²⁵ in ISO project managers (Goles et al. 2008; Lacity & Rottman 2008; Bullen et al. 2007; Karlsen & Gottschalk 2006). By separating leadership from business competence, we are able to include these skills; and thus, incorporate a comprehensive leadership construct into our theoretical model.

Table 3 exhibits the dimensions, elements and operational definitions of the *business competence* construct.

²³ Negotiating refers to activities to facilitate a compromise between conflicting parties (Quinn 1998).

²⁴ Brokering refers to maintaining external contacts and acquiring external resources (Quinn 1998).

²⁵ Mentoring refers to engaging in the development of people through caring and empathetic orientation (Quinn 1998).

Table 3: Dimensions and Operational Definitions of Business Competence

| Dimension | Definition |
|---|--|
| Organization Specific²⁶ | |
| Organizational Overview | <i>Client organization's</i> goals, objectives, critical success factors, external environment (e.g., industry, market, etc.) and constraints, where constraints include those imposed on the organization by its suppliers, buyers, government and competitors. |
| Organizational Units | Units' goals, functions, resources, challenges, work processes, and links with other internal and external units, where units refer to the divisions in the <i>client organization</i> that are involved in the project. |
| Project Responsibility | Understand the impact of the project on the <i>client organization's</i> performance – both for upper management (upstream) and users (downstream), as well as the impact of the project on the client-vendor's future relationship. |
| IT-Business Integration | Create synergy between IT and business by integrating IT into business capability to solve <i>client organization's</i> problems and increase performances. |
| Interpersonal | |
| Knowledge Networking | Knowing where knowledge resides in client, vendor, as well as other external organizations. |
| Interpersonal Communication | Ability to communicate with people at different levels of the organization (e.g., subordinates, peers, superiors, etc.), in various scenarios (e.g., pairs, team, etc.), and with those in other functional areas (i.e., non-IT people). |

Source: The dimensions and operational definitions in Table 3 are based on the work of Bassellier & Benbasat (2004).

²⁶ Items in organization specific dimension refer business knowledge on the *client side*.

3.2.2 IT Competence

We incorporated the IT competence construct proposed and investigated by Bassellier et al. (2003) into our taxonomy. The original construct contains two primary dimensions – *IT knowledge* and *areas of IT experience*. We made a slight modification by adding *IT standards* under the umbrella of the IT knowledge dimension. This element refers to the understanding of organizational level IT protocols and guidelines such as Information Technology Infrastructure Library (ITIL), Control Objectives for Information and related Technology (COBIT) and Capability Maturity Model Integration (CMMI). Due to the recent and influential legislation of the Sarbanes-Oxley Act of 2002, “IT professionals are facing great challenges to meet raised expectations to provide accurate, visible, and timely information, while ensuring the protection, privacy, and security of the organization’s information assets” (Damianides 2004, p. 1). Recent empirical research also supports IT standards as one of the critical IT skills for ISO project managers (Goles et al. 2008; Bullen et al. 2007).

Studies also identify IT architecture, IT security, database, system analysis and design, and informed buying (Goles et al. 2008; Bullen et al. 2007; Shi et al. 2005) as critical requirements for ISO project managers. As seen in Table 2 all of the required skills map into the IT knowledge dimension. Informed buying is grouped as part of IT competence since it was described as the IS manager’s capability to select the most suitable vendor for outsourcing purposes. This capability entails having the knowledge of the base organization’s current IT assets, knowledge of client-vendor technical compatibility, and the manager’s ability to garner information regarding the vendor’s past history (Shi et al., 2005). These characterizations are consistent with the technology,

applications, IT management, access to IT knowledge, and IT management experience elements. We did not make any alterations to the *areas of IT experience* dimension. Table 4 exhibits the dimensions, elements and operational definitions of the *IT competence* construct.

Table 4: Dimensions and Operational Definitions of IT Competence

| Dimension | Definition |
|---------------------------------|---|
| IT Knowledge | |
| Technology | Current and emergent technologies that are both generic to all industries, specific to both the client and vendor organizations, and their competitors. |
| Applications | Current and emerging IT applications portfolio, where applications refer to the ways IT is or could be used by organizations to achieve their business goals (e.g., in order processing, decision support, or financial control). |
| System Development | Involves an understanding of both systems development method and project management practices to understand the potential benefits, dangers, and limitations of IT. |
| IT Standards | Involves an understanding of organizational related protocols and guidelines such as ITIL, COBIT and CMMI. |
| IT Management | IT management is composed of activities similar to those used in other areas – vision and goal setting, allocation of resources, purchasing of resources (informed buying) and monitoring of progress. |
| Access to IT Knowledge | Knowing whom to contact to obtain more information about IT – both inside and outside of the organization – (e.g., colleagues, vendors, etc.) and secondary sources of knowledge (e.g., libraries, the Web). |
| Areas of IT Experience | |
| Project Experience | Involvement in the life cycle of IT projects, such as initiation, cost-benefit analysis, development, and implementation. |
| IT Management Experience | Involvement in directing the overall IT function, such as vision and strategy setting, planning and budgeting, and policy setting. |

Source: The dimensions and operational definitions in Table 4 are based on the work of Bassellier et al. (2003).

3.2.3 Leadership as Competence

Leadership is the process of “influencing others to take action in accord with a leader’s vision toward a shared purpose that takes into consideration the competitive environment, the goals of the organization, and the knowledge, capabilities, and motivation of the followers” (Shore 2005, p. 2). Current literature highlights leadership as a Critical Success Factor (CSF) in ISO. Using the case study method, Willcocks and associates conducted studies to identify client (Willcocks et al. 2006; Feeny & Willcocks 1998) and vendor capabilities (Lacity & Willcocks 2006a) necessary for ISO success. The capabilities models derived from these studies focus on human resource requirements and include leadership as the central item.

The studies by Willcocks and associates focused on leadership at the organizational level. There are several other studies in IS literature that specifically concentrate on leadership in ISO project managers (Bullen et al. 2007; Erickson & Ranganathan 2006; Karlsen & Gottschalk 2006; Shi et al. 2005). These studies investigate project management issues that revolve around tasks such as planning, scheduling, assigning tasks and negotiating with external party. Despite the attention given to this area, the constructs and variables appear fragmented (Table 2). For example, Erickson and Ranganathan (2006) derived their leadership constructs bottom-up, based on focus group feedback, while Karlsen & Gottschalk (2006) used a top-down approach, by applying Mintzberg’s (1980, 1971) managerial roles. Another fundamental problem with previous studies of leadership in ISO project managers is that they do not explore

the relationship between leadership and ISO project success²⁷. Instead, these studies give attention to developing the leadership construct for ISO managers (Erickson & Ranganathan 2006; Shi et al. 2005) or comparing the importance of certain leadership behaviours among different groups of IT professionals (Goles et al. 2008; Bullen et al. 2007; Karlsen & Gottschalk 2006).

Leadership, or more accurately leadership effectiveness, is a difficult concept to measure. The management literature suggests two proxy measures – (1) extent to which the leader’s group or organization performs its tasks successfully and attains its goals (i.e., via *outcome*), or (2) extent to which the leaders display the behaviours expected of them (i.e., via *role intensity*) (Yukl 1981). The first method typically involves objective measures, such as profit growth, profit margin and sales increase. However, these measurements are usually riddled with internal validity issues since it is difficult to control for the influence of other factors. We believe that second approach is more appropriate, and past studies have used subordinates, self-reports, or combination of both as the sources of information.

Several well-established typologies for leadership behaviours exist (Appendix B). For this study, we selected the latest and most comprehensive typology, the Quinn’s leadership framework (1991). The following section discusses Quinn’s typology in-depth.

3.2.3.1. Typology of Leadership: Quinn’s Leadership Framework

To examine leadership in ISO project managers, we applied the typology proposed by Quinn (1991) and represented them as dimensions of leadership

²⁷ Erickson and Ranganathan’s (2006) study linked leadership to ISO success. However, their study is exploratory and based on a small focus group.

competence²⁸. Quinn's framework is particularly well suited to this study since it considers leadership along two dimensions – *internal focus* versus *external focus*, and *control* versus *flexibility*. These dimensions reflect the inherent complexities in ISO projects, and consequently, the intricate tasks faced by the client and vendor ISO project managers.

Internal focus versus *external focus* considers the need for leaders to sustain the equilibrium between the internal and external environment. Internal focus leadership roles stress the “human and technical systems inside the organization” (Quinn 1991, p. 49). Meanwhile, external focus leadership roles are concerned about “responding to the outside change and continuously producing in a competitive market” (Quinn 1991, p. 49). The internal roles could compete with the external roles. For example, as *mentors* (internal role), leaders actively listen to the needs of their team members. On the other hand, as *producers* (external role), they must maintain good relationships with external entities. Conflict occurs when the requirements of team members contradict against those of external entities. The same principles underline the ISO project managers' positions. First, they constantly interact with both the internal environment (i.e., base organization) and external environment (i.e., client or vendor). Second, they must balance the internal needs (i.e., base organization's commercial environment) (Taylor 2007) and external needs (i.e., vendor-client relationships) (Goles 2001).

Control and *flexibility* consider the very nature of ISO projects. Strategic impact is a useful criterion for clustering ISO projects into distinct groups (Section 3.3.6; Table 9). ISO projects with low strategic impact are characterized as having clear and

²⁸ We also conducted a brief literature review for various managerial leadership frameworks available the management literature. The report for this review is included in Appendix B.

unambiguous tasks (Kishore et al. 2003; Nam et al. 1996). Some researchers equate low strategic impact ISO projects to transactional IS projects (Roy et al. 2006). This implies that low strategic impact ISO projects merely superimpose IT onto the existing organizational setting. “Thus, the impact of technology is limited and does not require substantial adaptation within the organization” (Roy et al. 2006, p. 9). At the opposite end of the spectrum, we have high strategic impact ISO projects that are closer in attributes to transformational IS projects. These projects are notoriously ambiguous. They may entail a major overhaul of existing business structures and processes, or even defining new business activities. These actions usually trigger “significant organizational upheavals accompanied by high risks of failure” (Roy et al. 2006, p. 10). From the lenses of the client and vendor ISO project managers, low strategic impact projects require them to work with well-defined tasks, and maintain the current status quo by preserving the firms’ existing structures and processes (i.e., *control*). In contrast, high strategic impact projects call for leadership roles in the direct opposite since the ISO project managers must deal with poorly defined tasks, and ensure that the firms (especially the client firms) are ready to adopt novel ways in their work settings. Project managers in high strategic impact ISO projects are responsible for significant change management activities (i.e., *flexibility*).

Based on these two dimensions, four distinct leadership quadrants with each having two leadership roles emerged: *human relations* (*facilitator* and *mentor*), *internal process* (*monitor* and *coordinator*), *open systems* (*innovator* and *broker*), and *rational goal* (*director* and *producer*). Table 5 summarizes the general characteristics and roles in Quinn’s (1991) leadership framework.

Table 5: Quinn's Leadership Framework

| | | |
|--------------------|---|--|
| Flexibility | Human Relations | Open Systems |
| | <p><i>Characteristics:</i></p> <ul style="list-style-type: none"> ▪ Toward the development of human resources and commitment. ▪ Emphasize information sharing and participative decision-making. ▪ Function best when tasks are not well understood and time is not an important factor. ▪ Individuals are held together with a common social system and common stake in what happens. <p><i>Roles:</i></p> <ul style="list-style-type: none"> ▪ <i>Facilitator</i> – Foster collective effort to build cohesion and teamwork. ▪ <i>Mentor</i> – Engage in the development of people through caring and empathetic orientation. | <p><i>Characteristics:</i></p> <ul style="list-style-type: none"> ▪ Toward expansion and adaptation. ▪ Emphasize innovation and creativity; doing things that has never been done before. ▪ Function best when tasks are not well understood and there is great urgency to complete them. <p><i>Roles:</i></p> <ul style="list-style-type: none"> ▪ <i>Innovator</i> – Facilitate innovation and change. ▪ <i>Broker</i> – Maintain external contacts and acquire external resources. |
| Control | INTERNAL PROCESS | RATIONAL GOAL |
| | <p><i>Characteristics:</i></p> <ul style="list-style-type: none"> ▪ Toward predictability and stability. ▪ Function best when tasks at hand are well understood and time is not an important factor. ▪ Individuals are given well-defined roles and are expected to follow rules. <p><i>Roles:</i></p> <ul style="list-style-type: none"> ▪ <i>Monitor</i> – Awareness of current situation, determine if rules are followed, and see that deadlines are met. ▪ <i>Coordinator</i> – Maintain structure and flow of the system. | <p><i>Characteristics:</i></p> <ul style="list-style-type: none"> ▪ Toward maximization of output, where the project is an economic tool. ▪ Emphasize profit and bottom line. ▪ Function best when tasks are well understood and there is great urgency to complete them. <p><i>Roles:</i></p> <ul style="list-style-type: none"> ▪ <i>Director</i> – Clarify expectations through processes such as planning and goal setting. ▪ <i>Producer</i> – Task oriented and work focused, with a lot of energy, motivation, interest, and personal drive. |
| | Internal focus | External Focus |

Another factor for selecting Quinn’s typology is its extensive coverage. Table 2 shows Quinn’s typology as a superset of all current literature associated to leadership and project management skills among IT professionals in ISO projects. We were able to integrate the fragmented constructs from earlier studies (Bullen et al., 2007; Erickson &

Ranganathan, 2006; Karlsen & Gottschalk, 2006; Shi et al., 2005). For example, we are able to map team responsibilities (Erickson & Ranganathan 2006) to leadership behaviours in the human relations quadrant. In addition, we also mapped planning and control, and governance to internal process, rational goal, and open systems leadership quadrants.

Nevertheless, for thoroughness and completeness, we also considered a competing typology espoused by Mintzberg (1980; 1971). This is because a number of studies in existing IS literature employed Mintzberg's typology to examine leadership in IS executives (Andresen et al. 2007; Karlsen & Gottschalk 2006; Smaltz et al. 2006; Gottschalk & Karlsen 2005; Karlsen et al. 2002; Grover et al. 1993; Stephens et al. 1992) and leadership related behaviours in IT usage among non-IS executives (Pinsonneault & Rivard 1998; Vlahos & Ferratt 1995). On the other hand, only one study in IS literature conducted by Roy et al. (2006) utilized Quinn's framework. The study successfully differentiated leadership behaviours between IS directors in transactional versus transformational IS projects. Overall, we found Mintzberg's typology to be non-comprehensive since it fails to cover the "team responsibilities" perspective as studied by Erickson and Ranganathan (2006).

In conclusion, we judge Quinn's leadership framework to embody the nature of ISO projects and project managers. Moreover, the framework offers extensive coverage of previous research related to leadership and project management skills in ISO project managers. Table 6 exhibits the operationalization of Quinn's leadership roles for this thesis.

Table 6: Operationalization of Quinn's Leadership Roles

| Models/Roles | Descriptions |
|-------------------------|--|
| Human Relations | |
| Mentor | Listening to others; providing moral support and encouragement; understanding self; understanding others and their needs; facilitating the development of individuals; supporting legitimate requests. |
| Facilitator | Encouraging participation in decision making processes; seeking consensus in decisions; building teams; negotiating compromise between conflicting members. |
| Internal Process | |
| Monitor | Managing collective and organizational performance; monitoring personal performance; gathering and disseminating information. |
| Coordinator | Scheduling, coordinating, and problem solving; managing projects; designing work and tasks; managing across functions; ensuring that rules and standards are met. |
| Rational Goal | |
| Director | Visioning, planning and setting goals; assigning roles to subordinates; establishing clear expectations; organizing; delegating tasks. |
| Producer | Working productively; focusing on task at hand; seeking closure for projects; motivating others to be productive; fostering a productive environment; managing time and stress. |
| Open Systems | |
| Broker | Politically astute; establishing, developing and maintaining a network of external contacts; acquiring resources to ensure the unit's power base; negotiating agreement and commitment; presenting ideas to external parties including top management. |
| Innovator | Thinking creatively; envisioning, encouraging and facilitating change, or new ideas. |

Source: The leadership models/roles and descriptions in Table 5 are based on the work of Denison et al. (1995) and Quinn (1991).

3.3 ISO Classifications

Due to the substantial economic impact of ISO and the accompanying interest by practitioners, academic research on ISO has evolved rapidly over the past two decades. As a consequence, numerous studies focusing on different aspects of ISO such as motivation, performance and partnership have emerged. Several of these studies generated classifications for ISO based on criteria such as the type of IS tasks being outsourced and the number of client and vendors. Table 7 outlines the different ISO classification criteria, the ISO types established based on each respective criterion, and the supporting key literature.

Table 7: ISO Classification Criteria, ISO Types & Key Literature

| Classification Criteria | Types | Key Literature |
|--|--|---|
| Extent of ISO | <ul style="list-style-type: none"> ▪ Total outsourcing <ul style="list-style-type: none"> ○ Spin-off (Subsidiary) ○ Joint venture ○ Traditional outsourcing ▪ Selective outsourcing <ul style="list-style-type: none"> ○ Spin-off (Subsidiary) ○ Joint venture ○ Selective sourcing ▪ Insourcing²⁹/Backsourcing³⁰ | <ul style="list-style-type: none"> ▪ Currie & Willcocks (1998) |
| Numbers of Client and Vendor | <ul style="list-style-type: none"> ▪ Simple Dyadic ▪ Multi-Vendor ▪ Multi-Client ▪ Complex Relationships | <ul style="list-style-type: none"> ▪ Gallivan & Oh (1999) |
| IS Tasks | <ul style="list-style-type: none"> ▪ Data Processing ▪ Systems Integration ▪ Systems Design/Planning ▪ Data Center ▪ Application Development ▪ Telecommunications/Networking | <ul style="list-style-type: none"> ▪ Ang & Straub (2002) ▪ Loh & Venkatraman (1992) |
| IS Functions | <ul style="list-style-type: none"> ▪ Core ▪ Commodity | <ul style="list-style-type: none"> ▪ King (1994) ▪ Saunders et al. (1997) |
| ISO Relationships (Risks/Rewards Sharing) | <ul style="list-style-type: none"> ▪ Supplier ▪ Partnership | <ul style="list-style-type: none"> ▪ Saunders et al. (1997) |
| ISO Relationships (Extent of Substitution & Strategic Impact) | <ul style="list-style-type: none"> ▪ Support ▪ Reliance ▪ Alignment ▪ Alliance | <ul style="list-style-type: none"> ▪ Nam et al. (1996) ▪ Kishore et al. (2003) |

²⁹ Insourcing refers to an organization that has never outsourced its IT/IS, and continues to retain full ownership of these services and functions (Dibbern et al., 2004).

³⁰ Backsourcing refers to an organization that brings back its IT/IS in-house after being outsourced (Dibbern et al., 2004).

The following sections will discuss each classification in Table 7 in more details.

3.3.1 Extent of ISO Classification

The extent of ISO is based on two dimensions. The first dimension relates to the level (or *how much*) that the client firm chooses to outsource. Currie and Willcocks (1998) identified three different levels of ISO – total, selective, and none. The second dimension is embedded in total and selective outsourcing modes. This dimension refers to ownership of IT/IS, such as ownership of hardware, network, and software licensing. There are three different types of ownership – internal (client has full ownership), partial (client and vendor both have some ownership), and external (vendor has full ownership). The types of outsourcing based on the combinations of level (*total* or *selective*) and ownership (*internal*, *partial*, or *external*) are:

- Total and selective outsourcing levels with the client having full ownership are both referred to as spin-offs, or wholly owned subsidiaries.
- Total and selective outsourcing levels with both the client and vendor having partial ownership are referred to as joint ventures.
- Total outsourcing level with the vendor having full ownership is referred to as traditional outsourcing.
- Selective outsourcing level with the vendor having full ownership is referred to as selective sourcing.

3.3.2 Number of Client and Vendor Classification

The second classification is based on the numbers of client and vendor firms involved in the outsourcing arrangement. There are four types of outsourcing modes

available. These are: simple dyadic, multi-client, multi-vendor, and complex relationship. A simple dyadic or a one-to-one outsourcing arrangement is considered risky for the client due to vendor opportunism (Gallivan & Oh, 1999). As such, some clients prefer to hire multiple vendors to provide services (i.e., multi-vendor). There are also instances when it makes more economic sense for clients with similar needs or in related industry to obtain services from a single vendor (i.e., multi-client). Finally, several client companies may form outsourcing relationships with several vendors. Gallivan and Oh (1999) deemed the latter as the most complicated outsourcing type in their classification. Thus, they dubbed the multi-client and multi-vendor ISO relationships as complex relationships.

3.3.3 IS Tasks Classification

The third classification is based on the IS tasks being outsourced. The common tasks being outsourced are data processing, systems integration, systems design/planning, data center, application development, and telecommunications/networking. This particular classification implies that vendor firms must be competent in specific IT areas. For example, outsourcing of data center requires the vendor firm to be knowledgeable in databases and data processing (e.g., on-line analytical processing or OLAP).

3.3.4 IS Functions Classification

Core IS functions are part of a firm's core competencies (Section 2.1.2). Therefore, as in core competencies, core IS functions provide strategic advantages to a firm; while as in non-core competencies, commodity IS functions are those that are not critical to the firm's competitive advantage. The conventional wisdom is that firms

should not outsource their core IS functions. The justifications for this conclusion are parallel to the justifications for not outsourcing core competencies. Outsourcing such functions are deemed as too difficult, risky, and costly for client firms. Furthermore, vendor firms will not be able to leverage the knowledge they gain for future projects.

Firms should outsource core IS functions only in cases when they lack the talent and skills to develop these core applications themselves. If the need to outsource core IS functions arises, firms are strongly advised to create tight contracts and strict monitoring systems to ensure outsourcing success (Saunders et al. 1997).

Commodity IS functions, on the other hand, are considered to be in stark contrast to core IS functions. Commodity functions are not critical to the firms' competitive positioning, hence are usually regarded as prime candidates for outsourcing. Nonetheless, firms are advised to carefully consider the possibility of commodity IS functions evolving into core functions. If a particular commodity IS function has the potential to become a core IS function in the future, outsourcing should be carefully scrutinized, and possibly avoided (Saunders et al. 1997). Table 8 highlights the major differences between core and commodity IS functions.

Table 8: Differences between Core and Commodity IS Functions

| Criteria | Core | Commodity |
|---|---|--|
| Growth | Evolve slowly through collective learning and information sharing; Cannot be enhanced through additional large investments. | Rapid expansion and enhancement are possible through capital investments. |
| Relationship to Other Functions³¹ | Synergistic – symbiotic-like, one enhances the performance of the other. | Purely supportive. |
| Knowledge Transfer | Difficult and requires a lot of effort from both knowledge sender and knowledge receiver. | Easy, and requires relatively less effort; Knowledge transfer transactions are thus relatively brief. |
| Competitive Advantage | Confers competitive advantage in the perception of customers. | None; Rarely noticed by customers. |
| Investment Cashed-Out Option | In most cases investments are irreversible. | In most cases investments are reversible; Possible to sell to market since asset/knowledge is not specialized. |
| Tasks | Complicated, difficult to understand, and sometimes not well defined; High asset specificity ³² . | Straightforward, easy to understand, small, and usually unambiguous; Low asset specificity. |

Source: The differences between core and commodity IS functions highlighted in Table 8 are based on the work of King (1994) and Saunders et al. (1997)

Based on Table 8, core IS functions requires learning and information sharing. Client and vendor firms that are engaged in ISO projects involving core functions must transfer their knowledge and skills to each other (i.e., client transferring their business competence to vendor, and vendor transferring their IT competence to client) (Poppo & Lacity 2002).

³¹ Relationship to other functions refers to how the core or commodity function relates to other function in the organization. A core function usually enhances the performance of other functions in the organization, while a commodity function usually has little influence on performance.

³² Asset specificity refers to the extent to which the investments made to support a particular transaction have a higher value to that transaction than they would have if they were re-deployed for any other purpose (McGuinness 1994).

3.3.5 ISO Relationships: Risks/Rewards Sharing Classification

In recent years, an increasing number of client companies have formed *partnerships* with their respective vendors. These relationships are characterized by long-term contractual agreements that permit client and vendor firms to share the risks and rewards of ISO (Saunders et al. 1997). This style of ISO arrangement is regarded as more advantageous to both firms since long-term relationships allow the vendors to learn the clients' complex business processes, hence risks or rewards sharing creates a "win-win" atmosphere between the firms. Therefore, the client firms are protected against the vendors' profit maximization behaviours, which usually come at the expenses of the clients' (Kern et al. 2006). In some cases, partnerships are achieved through partial ownerships. The clients would purchase considerable equities in the vendor firms. For example, Barclay Bank bought equity stakes in ISO vendors Edotech, Deverill Computer & Communications, as well as Comdisco Inc. (Marcolin & Ross 2005).

The more traditional ISO arrangements do not involve risks or rewards sharing. The *supplier* mode of relationship is rather typical since the client and vendor firms do not share the same profit motives (Saunders et al. 1997; Lacity et al. 1995). The vendors' profits are "inevitably maximized at the customers' expenses when the clients' costs increase" (Saunders et al 1997, p. 65). Such an ISO arrangement is deemed to be a "fixed-pie," thus both firms strive to protect their own interests.

3.3.6 ISO Relationships: Extent of Substitution & Strategic Impact Classification

Nam et al. (1996) proposed classification based on two criteria viewed as germane to outsourcing relationships. The first criterion entails the *extent of substitution*. We need

to consider two key issues in determining the extent of substitution in ISO. These issues are ownership and control of various IT/IS assets such as hardware, software, and telecommunications infrastructure, which have been transferred to the vendors (Kishore et al. 2003). An ISO relationship with a high extent of substitution implies that high degrees of ownership and control that have been transferred to the vendor(s). Consequently, a high extent of substitution makes it more difficult for the client firms to replace their current vendors in the near future. An example of a relationship with a high extent of substitution is the Kodak-IBM deal with “Kodak transferring most of its in-house data center operations to IBM, while the traditional IS contracts transfer only a part of such operations” (Nam et al. 1996, p. 38).

The second dimension – *strategic impact* – captures the influence that the outsourced IS functions have on the clients’ competitive positions and their long-term strategies. This dimension is somewhat similar to the ISO classification based on IS functions (Section 3.3.4). Low strategic impact IS functions are commodity functions; while high strategic impact IS functions are core functions. There are four modes of relationships in this classification. They are labelled as: *support*, *alignment*, *reliance* and *alliance*. Table 9 displays the key characteristics of these ISO relationships.

ISO projects classified under the *support* relationship have low extent of substitution and low strategic impact. The vendors are restricted to commodity IS functions and are usually selected based on economic justification. These projects are typically simple, with low set-up costs and short-term contracts (e.g., payroll processing). It is also relatively easy to find alternative vendors.

ISO projects under the *reliance* relationship have high extent of substitution and low strategic impact. As in support projects, vendors are restricted to commodity IS functions. The contracts range from short-term to moderate duration. IT-enabled BPO outsourcing projects are prime examples of reliance relationships. The main motivation to outsource is cost reduction.

For *alignment* ISO projects, extent of substitution is low and strategic impact is high. Clients usually want to gain world-class technical expertise. Vendors are contracted for core IS functions, and the contracts are mostly moderate to long-term. Some examples of alignment ISO projects are ERP implementation, and customized systems development.

Lastly, we have ISO projects under *alliance* relationship where extent of substitution and strategic impact are both high. Client and vendor firms are engaged in long-term relationships. In some cases, client firms will have considerable equities in vendor firms. The tasks are complicated; therefore, team members from both the client and vendor sides must frequently interact. This relationship requires the highest commitments from all parties involved.

In developing our theoretical model of the competencies required for successful ISO outcome, we will rely on the ISO classification based on extent of substitution and strategic impact of ISO dimensions (Section 3.3.6). This classification is particularly relevant here since each type of outsourcing relationship requires *different sets of competencies* in client and vendor firms (Kishore et al. 2003). In their study, Kishore et al. (2003) traced the changes in of ISO relationships between client and vendor firms. They conducted a case study on four client-vendor relationships over a span of three

years. Two of the key discussion points in their analysis are the competencies possessed by the firms and monitoring mechanisms relevant for each ISO relationship type. We can utilize these key points and extrapolate the different sets of competencies required in client and vendor project managers.

Table 9: Characteristics of ISO Relationships (Extent of Substitution & Strategic Impact)

| | | |
|-------------------------------|---|---|
| High | RELIANCE | ALLIANCE |
| | <p><i>Criteria:</i></p> <ul style="list-style-type: none"> ▪ Cost reduction is generally the major motivation for ISO. ▪ Contract periods are usually short-term to moderate. ▪ Vendors are restricted to commodity IS functions. <p><i>Required Competency and Monitoring Mechanism:</i></p> <ul style="list-style-type: none"> ▪ Ability to routinize rules and procedures, and to effectively monitor the contractual outcomes. ▪ Outcome-based controls are more effective than behaviour-based controls. ▪ Effective incentive plans augment outcome-based controls, as vendors are more highly involved in more facets of a firm’s IS/IT provisioning. ▪ Ability to call and evaluate multiple bids is needed to ensure a cost-effective outsourcing deal. ▪ Due to a high extent of substitution by vendors, prior planning is required to keep the “lights on” existing application systems prior to expiration of current ISO outsourcing contracts. | <p><i>Criteria:</i></p> <ul style="list-style-type: none"> ▪ This relationship involves management of a strategic partnership with the vendors. ▪ External vendors substitute for in-house operations and are completely responsible for core IS functions. <p><i>Required Competency and Monitoring Mechanism:</i></p> <ul style="list-style-type: none"> ▪ Behaviour-based performance measurement is usually effective as outcomes for outsourced information services are the most difficult to specify; they are generally most ambiguous, uncertain, and dynamic. ▪ Effective monitoring mechanisms are high on mutual trust and low on contractual control. This requires conscious attention to the process of development of mutual inter-organizational trust between the client and vendor over time. ▪ Profit sharing rules needs to be set up to give incentive to the vendors to engage in mutually beneficial behaviours. ▪ Common objectives and mission statements help achieve goal symmetry between client and vendor firms. ▪ Informal communication channels are important. |
| Low | SUPPORT | ALIGNMENT |
| Extent of Substitution | <p><i>Criteria:</i></p> <ul style="list-style-type: none"> ▪ Typically involve traditional IS services such as payroll processing. ▪ This relationship imposes the lowest switching and set-up costs. ▪ Cost is a major factor in decision to outsource and selection of vendors. ▪ Vendors are restricted to commodity IS functions. ▪ Size of the project is relatively small compared to ISO projects in other types of relationships. <p><i>Required Competency and Monitoring Mechanism:</i></p> <ul style="list-style-type: none"> ▪ Ability to organize and manage a multiple bidding process is required to reduce ISO costs. ▪ Monitoring the market on an on-going basis helps create benchmarks that can be used to evaluate the costs and services of current vendors. ▪ Outcome-based performance measurement is usually effective in this relationship. | <p><i>Criteria:</i></p> <ul style="list-style-type: none"> ▪ Mostly project-based IS services, such as those required for new application systems development or implementation of package-based solutions. ▪ Gaining access to world-class technical expertise is generally a major motivation for ISO. ▪ Vendors are involved with core IS functions. <p><i>Required Competency and Monitoring Mechanism:</i></p> <ul style="list-style-type: none"> ▪ Ability to integrate existing information systems with new information systems is usually required as vendors usually have little technical knowledge about client’s existing systems. ▪ Technically competent in-house personnel are required to provide technical expertise about existing systems and for implementing new systems. ▪ Behaviour-based controls are more effective for monitoring vendors’ performance here as specifications and outcomes are more uncertain, ambiguous and dynamic. |
| | Low | High |
| | Strategic Impact of ISO | |

Source: The summary of criteria, required competency, and monitoring mechanism in Table 9 are based on the work of Kishore et al. (2003).

Table 10 summarizes the mapping from the required competencies identified in the four ISO relationships into their respective project management competencies. We see that client and vendor project managers in all four ISO relationships must be able to measure the outcomes of the outsourced projects. This particular competence is mapped to the IT management and IT management experience dimensions of IT competence. We also find similarity in the competence requirements for support and reliance relationships. Since extent of substitution is low in support and reliance, client project managers in these projects must be able to handle tasks (e.g., developing requirements document, identifying potential vendors, and evaluating proposals) during the bidding and vendor selection stages. We consider these stages as part of informed buying that requires IT competence under the application, IT management, access to IT knowledge, and IT management experience dimensions (Section 3.2.2).

For reliance ISO projects, two competencies were identified. First, client and vendor project managers must be able to routinize the rules and procedures. This competence maps to the internal process leadership quadrant. The second competence relates to only the vendor project managers. Vendor project managers are highly involved in the client firms' IT/IS provisioning, and exposed to client firms' organizations. Therefore, their knowledge of the client firms will increase. They will have business competence that includes organizational overview, organizational units, project responsibility, IT-business integration, as well as knowledge networking dimensions.

In alignment ISO projects, system development, IT-business integration, and access to IT knowledge dimensions under IT competence are considered critical. The first two dimensions are important for vendor project managers since they usually need to

integrate existing IS with new IS. Meanwhile, access to IT knowledge is important for both client and vendor project managers since they require technical information on existing IS from client-side experts.

Projects classified as alliance require strong client-vendor relationship. According to Kishore et al. (2003), trust and mutual understand are important factors in the relationship. Therefore, client and vendor project managers must display high leadership behaviours in the human relations leadership quadrant and have high interpersonal communication skills.

Table 10: Mapping Competency Requirements Based on ISO Relationships to Project Management Competencies³³

| Project Management Competencies | ISO Relationships (Table 9) | | | |
|---------------------------------|--|--|--|---|
| | Support | Reliance | Alignment | Alliance |
| Leadership (Table 5) | No direct mapping was identified. | Client and vendor project managers must be able to routinize the rules and procedures in ISO projects [<i>Internal Process</i> quadrant with the <i>Monitor</i> and <i>Coordinator</i> leadership roles]. | No direct mapping was identified. | Client and vendor project managers must build relationship by fostering trust and mutual understanding [<i>Human Relations</i> quadrant with the <i>Mentor</i> and <i>Facilitator</i> leadership roles]. |
| Business (Table 3) | No direct mapping was identified. | Vendor project manager is usually involved in various facets of the client’s IT/IS provisioning [<i>Dimensions classified under Organization Specific and Knowledge Networking</i>]. | No direct mapping was identified. | Client and vendor project managers must build relationship through informal communication channels [<i>Interpersonal Communication</i>]. |
| IT (Table 4) | Client project manager must be able to call and evaluate bids for ISO projects [<i>Application, IT Management, Access to IT Knowledge and IT Management Experience</i>]. | | Vendor project manager must be able to integrate existing and new IS [<i>System Development and IT-Business Integration</i>]. Client and vendor project managers need in-house technical information on existing IS [<i>Access to IT Knowledge</i>]. | No direct mapping was identified. |
| | Client and vendor project managers must be able to measure the outcomes of outsourced projects [IT Management and IT Management Experience]. | | | |

Note:

1. [*Specific dimensions*] from project management competencies are written in bold and italic fonts.
2. In some cases, the required skills identified by Kishore et al. (2003) for the ISO classification based on extent of substitution and strategic impact can be directly mapped into business competence, IT competence, or leadership. However, in other cases, we are unable to find any direct mapping and these are noted as “No direct mapping was identified.”

³³ This table maps the competence requirements based on the extent of substitution and strategic impact classification (Kishore et al. 2003) found in Table 9 to specific dimensions in business competence (Table 3), IT competence (Table 4), and leadership (Table 5).

3.4 ISO Project Success

The customary view of ISO project success is through the lenses of the clients. Earlier studies in ISO literature operationalized ISO project success as the degree of satisfaction with the quality of the product, and the technical, strategic as well as economic benefits that clients receive from the completed project (Swinarski et al. 2002; Lee & Kim 1999; DiRomualdo & Gurbaxani 1998; Grover et al. 1996). In contrast, more recent research has widened the view of ISO project success by adding the vendors' commercial environment (Taylor 2007; Kern et al. 2006; Goles 2001). Kern et al. (2006) posited that when vendors are unable to earn reasonable profit margins, service or product quality decreases, and additional costs are incurred to clients. Therefore, ISO project success can only occur when the client and vendor are in a win-win scenario (Kern et al. 2007). Accordingly, Taylor (2007) suggests a broader multidimensional definition of ISO project success, with three criteria: (1) Meeting planning goals (i.e., project process success); (2) Providing benefits to the users and meeting the expectations of upper management (i.e., project outcome or product success); and (3) Providing benefits to the vendor (i.e., commercial environment success). Prior studies have repeatedly linked ISO project success to firm-level business, technical, and leadership competencies (Lacity & Willcocks 2006a; Willcocks et al. 2006; Goles 2001; Standish Group 2000; Feeny and & Willcocks 1998; Standish Group 1994).

This study incorporates the more expansive definition of ISO project success as recommended by more recent literature. Table 11 summarizes the different aspects of ISO project success that we take into consideration.

Table 11: Summary of the Multidimensional Criteria of Project Success

| Aspect of Success | Perspective | Criteria |
|--|--------------------|---|
| Project Process (Schedule & Budget) | Client Vendor | <ul style="list-style-type: none"> ▪ Meeting planning goals, which include: <ul style="list-style-type: none"> ○ Meeting schedules ○ Meeting budgets |
| Project Outcome (Product) | Client | <ul style="list-style-type: none"> ▪ Providing benefits to users by: <ul style="list-style-type: none"> ○ Meeting product requirements ○ Delivering quality service ○ Delivering quality information ▪ Providing benefits to management by achieving the expected technical, strategic and economic benefits. |
| Commercial Environment | Vendor | <ul style="list-style-type: none"> ▪ Building potential for future revenue for vendors through referrals, testimonials and repeat business (continuous relationship). |

Source: The dimensions and criteria for project success in Table 11 are based on the work of Lee & Kim (1999) and Taylor (2007).

3.5 Chapter Summary

In Chapter 3 we discussed the theoretical foundations for our theoretical model. We present an overview of the critical managerial competencies in ISO, which we derived by integrating prior studies. This is followed by a discussion on several ISO classifications available in current literature. We conclude this section by selecting the ISO relationship classification based on strategic impact and extent of substitution criteria. This classification allows us (in most cases) to directly map certain managerial competencies to a particular ISO category. The last section addresses ISO project success.

In the next chapter we discuss the theoretical model and propositions we derived from the theoretical foundations.

CHAPTER 4: THEORETICAL MODEL & PROPOSITIONS

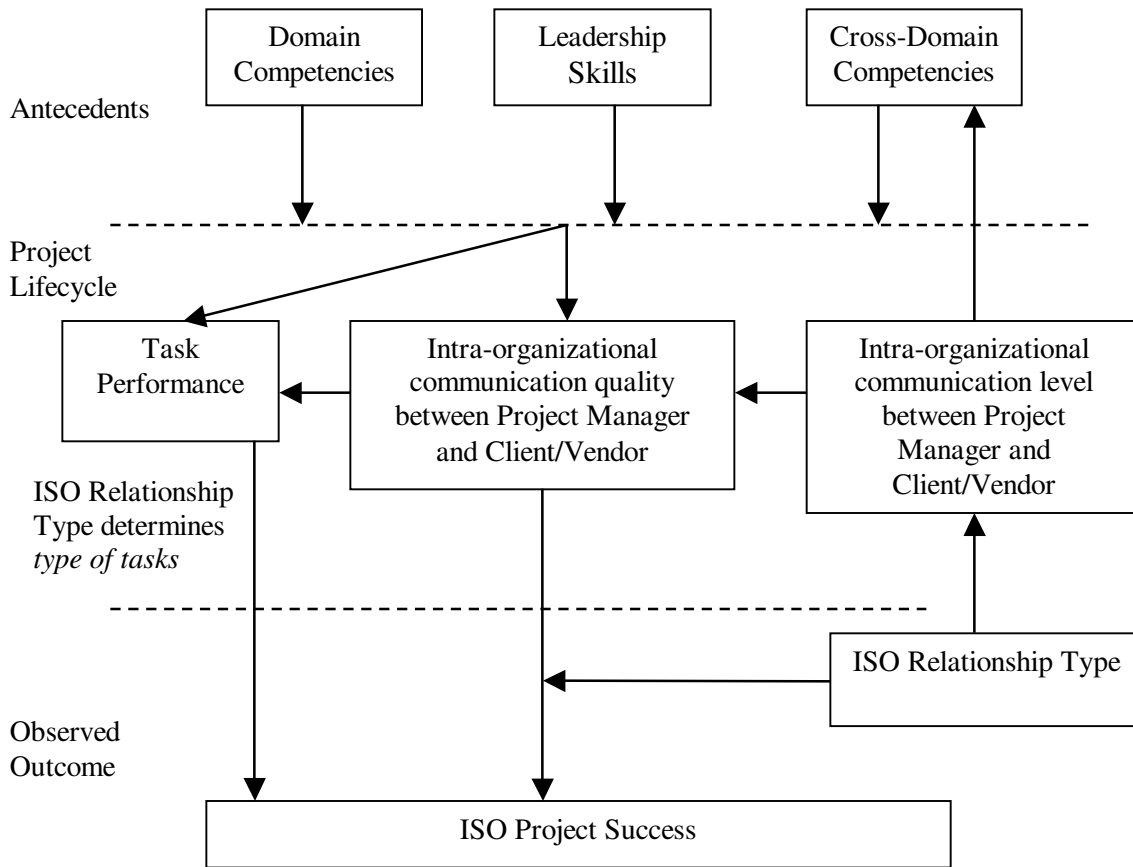
This chapter discusses the theoretical model linking managerial competencies to ISO project success. We derive the model based on the theoretical foundations outlined in Chapter 3. In developing our model, we will rely on the ISO classification based on extent of substitution and strategic impact criteria (Section 3.3.6; Table 9). We will also rely on the current ISO literature that has primarily centered on three different theoretical perspectives – *economics*, *strategic management* and *social*. In addition, we present a set of propositions for future empirical research. Section 4.1 covers the theoretical model linking managerial competencies to ISO project success, while Section 4.2 advances the formal propositions that represents the research model.

4.1 Theoretical Model

A theoretical model incorporating managerial competencies and their influence on ISO project success is shown in Figure 2. We assume that the *client represents business knowledge*, while the *vendor represents IT knowledge*. Thus, the domain competence for client project managers refers to business competence, while the domain competence for vendor project managers refers to IT competence. Accordingly, the cross-domain competence for client project managers refers to IT competence, while the cross-domain competence for vendor project managers refers to business competence. By representing the competencies into domain, cross-domain and leadership³⁴, we are able to have a single yet concise model that reflects competencies for both client and vendor project managers.

³⁴ As opposed to representing these competencies as business competence, IT competence, and leadership skills.

Figure 2: A Theoretical Model Linking Managerial Competencies to ISO Project Success



Based on the discussions in Chapter 3 (Section 3.1.1; Section 3.3.6; Table 9), we develop a two-stage model linking managerial competencies to ISO project success. We include three intermediary variables – *task performance*,³⁵ *intra-organizational communication quality*³⁶, and *intra-organizational communication level*³⁷ – to further explain the relationship between managerial competencies and ISO project success.

³⁵ Task performance refers to the effectiveness in which the project managers perform activities that contribute to ISO project outcomes either directly by conducting certain activities, or indirectly by providing the required resources (Borman & Motowidlo 1997)

³⁶ Intra-organizational communication quality refers to accuracy, timeliness, adequacy, and credibility of communication process (Lee & Kim 1999) between project members and members of the opposite firms.

³⁷ Intra-organizational communication refers the frequency of communication process (Lee & Kim 1999) between project members and members of the opposite firms.

The first stage in the model depicts managerial competencies as antecedents, and positively influencing task performance and intra-organizational communication quality (Section 3.1.1). ISO relationship type determines the type of tasks project managers are responsible for and the communication level between project managers and members of the opposite firms (Section 3.3.6; Table 9). For example, support projects require project managers to monitor their external environments, but call for minimal intra-organizational communication since projects are simple and under short duration. On the other hand, alliance projects require project managers to focus on the project at hand and be in charge of change management activities. Alliance projects also entail high intra-organizational communication level since projects are highly complex and long-term. This model considers the positive influence of intra-organizational communication level on cross-domain competencies and intra-organizational communication quality. In turn, intra-organizational communication quality positively influences task performance.

Meanwhile, the second stage displays the positive influences of task performance and intra-organizational communication quality on ISO project success. ISO relationship type moderates the relationship between communication quality and success. This is due to the fact that only alliance projects stress the importance of open and continuous communication channels between client and vendor firms for positive project outcomes (Section 3.3.6; Table 9).

Section 4.2 offers a set of researchable propositions based on the theoretical model.

4.2 Propositions

The theories from economics, strategic management and social perspectives utilize in previous ISO research will shape our propositions that will be posited accordingly. Even

though these views emerge from different fields of studies, in the case of managerial competencies for ISO projects, they tend to substantiate or complement each other.

An important aspect to highlight is that the propositions we offer focus on patterns of managerial competencies for successful ISO projects under different types of ISO relationships (e.g., propositions for successful support projects convey that project managers must have high domain competence, low cross domain competence, and high rational goal leadership skills). We deviate from translating the theoretical model directly into propositions since we wish to state the propositions as necessary conditions³⁸. When stated as necessary conditions, (1) successful ISO projects imply the existence of specific patterns of managerial competencies; However, (2) managerial competencies solely do not infer successful projects since other possible factors may come into play (e.g., top management support, user involvement, and client-vendor compatibility). Item (1) reflects our stance on the critical importance of managerial competencies, while item (2) allows us to acknowledge the importance of other factors as well.

Before we proceed further, we like to note that even though the propositions deviate slightly from the theoretical model (Figure 2), ***the justifications for the propositions are still based on the arguments behind this model*** (Section 4.2.1 – Section 4.2.3).

³⁸ A necessary causal condition means that if y is a necessary cause of x , then the presence of x necessarily implies the presence of y . The presence of y , however, does not imply that x will occur.

4.2.1 Propositions Concerning Domain Competencies

Domain competencies are necessary for ISO project success in all forms of ISO relationships. We make this conclusion based on the following arguments:

- ***Theories based on economics perspectives:*** Firms must specialize to gain benefits (Ang & Straub 2002), and they must hire agents with those specialties needed to efficiently perform the work (Ye 2005).
- ***Theories based on strategic management perspectives:*** Several models denote capability³⁹ requirements for client and vendor firms (Feeny et al. 2006; Willcocks et al. 2005; Peppard & Ward 2004; Feeny & Willcocks 1998). These models apply various strategic management theories, which are core competence and Resource-based View (RBV). All models emphasize domain expertise as a precursor to ISO performance.
- ***Theories based on social perspectives:*** Relational Exchange Theory (RET) asserts that “a fundamental requirement for the ultimate success of a relationship is that each firm must provide the other with some advantage relative to alternatives” (Goles 2001, p. 34). Applying this theory into the context of ISO, client and vendor firms must have the resources, which the other firm requires and yet does not possess. These resources include competencies that are specific to each firm’s domain.

As stated earlier, client firm’s domain is business, while the vendor firm’s domain is IT. As representatives of the client and vendor firms, the client and vendor project managers represent the capabilities of their respective firms (i.e., ***the client project managers’ domain expertise is business, while the vendor project managers’ domain***

³⁹ A firm-level competency is typically referred to as a capability in ISO literature.

expertise is IT). Supported by the theories grounded in the economic, strategic management, and social perspectives, we expect project managers from both firms to be highly competent in their own domains.

Proposition 1: In a successful ISO project, the *client and vendor project managers will both have high domain competence* (i.e., high business competence for client project manager and high IT competence for vendor project manager).

4.2.2 Propositions Concerning Cross-Domain Competencies

One of the fundamental constructs in both the TCE and Agency Theory is *asset specificity* (Section 2.1.1). *Low strategic impact functions* have *low asset specificity* since they do not reflect a firm's special capabilities, and thus require minimal relationship-specific investments (Swinarski et al. 2002). A prior study on software offshore outsourcing revealed that acquiring cross-domain competence impedes software development performance when the project does not require specialized knowledge (Tiwana 2004a; Tiwana 2004b). This study indicates that such action incurs high costs for firms, and at times backfires (e.g., the vendor making erroneous business assumptions without soliciting the client's clarifications). These arguments suggest that for a successful ISO project involving low strategic impact IS function, cross-domain competence is unnecessary and may even hinder success.

In the case of ISO projects where the client and vendor engage in a *support* type relationship, the outsourced projects are restricted to those with low strategic impact. According to the concept of asset specificity discussed earlier, successful ISO projects involving low strategic impact IS functions will have client and vendor project managers with low cross-domain competence.

Apart from asset specificity, another aspect to consider is the *type of tasks associated* in support type relationships (Table 9). The tasks are usually well defined, and contracts are short term. Switching vendors are relatively common since this relationship imposes the lowest switching and set-up costs (i.e., low extent of substitution). As a result, the interactions between client and vendor project managers are kept minimal with little possibility of knowledge transfers. We therefore posit that:

Proposition 2a: In a successful ISO project where the client and vendor engage in a *support type relationship*, the *client and vendor project manager will both have low cross-domain competence*.

In a *reliance* type relationship, outsourcing is again restricted to low strategic impact IS functions. Unnecessary cross-domain competence may become an obstacle to success. Nevertheless, we need to bear in mind that in reliance relationships, clients transfer ownerships and control of numerous IS/IT assets to vendors, and contracts range from short-term to moderate. Vendors are highly involved in various facets of clients' businesses. Relative to support type relationships, vendor project managers' interactions with clients are more frequent and prolonged. To ensure success, vendor project managers will need to develop an understanding of the clients' business processes, structures, and activities. This leads us to posit:

Proposition 2b: In a successful ISO project where the client and vendor engage in a *reliance type relationship*, the *client project manager will have low IT competence while the vendor project manager will have high business competence*.

High strategic impact or core IS functions confer competitive advantage to firms, evolve slowly through collective learning and information sharing, and cannot be easily

imitated or transferred due to their highly specialized nature (King 1994). Furthermore, high strategic impact IS functions are unique to firms, and therefore, have high asset specificity. Poppo and Zenger (1998) found asset specificity to be negatively correlated to ISO success. In other words, the more customized or unique the IS functions being outsourced, then the more likely that the project outcome is less successful. However, performance will significantly improve when the vendor and client develop social relations and shared norms (Poppo & Lacity 2002).

Based on theories grounded in social perspectives, social relations and shared norms in ISO are developed via communication⁴⁰ qualities (Lee & Kim 2005; Lee & Kim 1999; Mohr & Spekman 1994). However, a major challenge in ISO projects is the quality and extent of fruitful communication between the members of the client and vendor firms. These individuals are from different firms with different cultural values, and sometimes even from different national cultural values as in the case of offshoring. Prior studies in ISO have shown that *communication qualities can be achieved through cross-domain competence* (or shared domain knowledge) (Goles 2001; Lee 2001; Lee & Kim 1999; Mohr & Spekman 1994).

Further evidence of cross-domain competence influencing partnership and communication qualities can be found in IT-Business alignment studies. Reich and Benbasat (2000) found that cross-domain competence influences communication level between IT and business executives, and this in turn influences short-term alignment. In addition, the authors observed that cross-domain competence influences long-term alignment although their study cannot provide a causal explanation for this phenomenon.

⁴⁰ Communication quality considers the following aspects of communication: frequency, accuracy, timeliness and credibility (Lee & Kim 1999).

Other relevant research work includes the study by Bassellier et al. (2003) and Bassellier and Benbasat (2004). The first study found positive relationship between line managers' IT competence and their intentions to champion IT, while the second study found positive relationship between IT managers' business competence and their intentions to partner with line managers. Hence, we predict that in general, successful ISO projects involving high strategic impact IS functions will require project managers with high cross-domain competence.

For ISO projects where the client and vendor engage in an *alignment* type relationship, the outsourced projects are those with high strategic impact. The tasks range from moderate to highly complex. Consequently, the contracts are negotiated from moderate to long term, and more intra-firm interactions transpire involving client and vendor project managers. Client firms require technically competent in-house personnel to provide technical expertise about existing systems to vendor firms, as well as to understand the newly implemented systems or packaged solutions (i.e., the most common type of projects in alignment relationships).

Nevertheless, cross-domain competence in vendor project managers is less applicable, due to the low extent of substitution by the vendors. Unlike vendor project managers in reliance type relationships, vendor project managers in alignment type relationships are not involved in various facets of clients' business processes. ISO project success relies more on client project managers having high technical expertise. In lieu of the specific circumstances in alignment relationships, we contend that although alignment involves high strategic impact IS functions, only cross-domain competence in client project managers is pertinent. We therefore advance the following proposition:

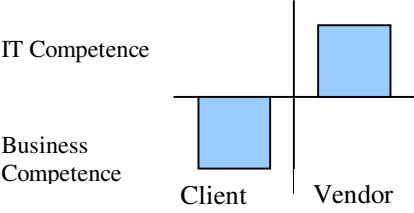
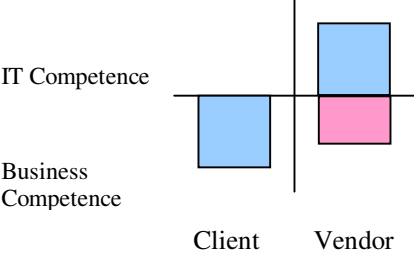
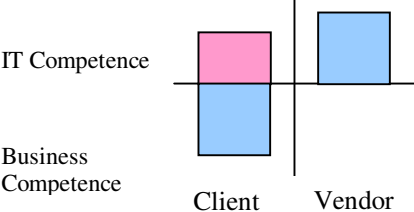
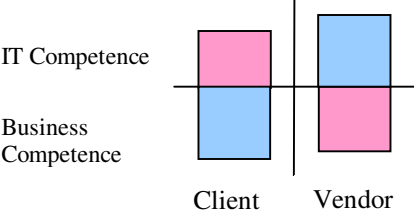
Proposition 2c: In a successful ISO project where the client and vendor engage in an *alignment type relationship*, the *client project manager will have high IT competence while the vendor project manager will have low business competence*.

Lastly, we examine client and vendor project managers working in *alliance* type relationships. Alliance relationships consist of projects with high strategic impact IS functions, where cross-domain competence enables success. The extent of substitution (or switching cost) is high since projects are highly complex. Therefore, (1) the client and vendor firms must invest significant resources and time to understand the complex requirements (Kishore et al. 2003; Nam et al. 1996), and (2) contracts are long term. Due to the high extent of substitution, incentives are created such that the client and vendor firms engage in mutually beneficial behaviours (Poppo & Lacity 2002). Effective alliance relationships are realized through partnerships, where trusts and commitment exist. These attributes (i.e., trusts and commitment) are developed via open communication channels; and open communication channels are cultivated through shared domain knowledge between the parties (Goles 2001; Lee 2001; Reich & Benbasat 2000; Lee & Kim 1999; Mohr & Spekman 1994). Given this scenario, we posit that:

Proposition 2d: In a successful ISO project where the client and vendor engage in an *alliance type relationship*, the *client and vendor project manager will both have high cross-domain competence*.

Table 12 summarizes the arguments that we used to derive the propositions on cross-domain competence. Next, we put forward the propositions for leadership.

Table 12: ISO Relationships & Justifications for Cross-Domain Competencies Propositions

| ISO Relationship | Justifications | Proposition & Diagram |
|------------------|--|--|
| Support | <ul style="list-style-type: none"> ▪ Outsourcing is restricted to commodity IS functions where cross-domain competence is unnecessary, and may even impede performance. ▪ Tasks are small, simple and straightforward, and contracts are only short term. ▪ Client and vendor project managers' interactions are minimal. | <p>Both client and vendor project managers have low cross-domain competence.</p>  |
| Reliance | <ul style="list-style-type: none"> ▪ Outsourcing is restricted to commodity IS functions where cross-domain competence is unnecessary, and may even impede performance. ▪ Tasks range from simple to moderately complex, and contracts are short to moderate term. ▪ Vendors are highly involved in various facets of client firms' businesses since they take over ownerships of client firms' IS/IT assets; they need to understand client firms' business. ▪ Client and vendor project managers' interactions are moderate. | <p>Client project managers have low IT competence, while vendor project managers have high business competence.</p>  |
| Alignment | <ul style="list-style-type: none"> ▪ Outsourcing involves core IS functions where cross-domain competence positively influences success. ▪ Tasks range from moderate to highly complex, and contracts are moderate to long term. ▪ Client and vendor project managers' interactions are moderate. ▪ Client firms require technical knowledge to understand the newly implemented systems, and/or package solutions. | <p>Client project managers have high IT competence, while vendor project managers have low business competence.</p>  |
| Alliance | <ul style="list-style-type: none"> ▪ Outsourcing involves core IS functions where cross-domain competence positively influences success. ▪ Tasks are highly complex, and contracts are long term. ▪ Client and vendor project managers' interactions are frequent; it is important to have continuous and open communication channels. ▪ Trusts, commitment, and mutual understanding between firms are vital. | <p>Both client and vendor project managers have high cross-domain competence.</p>  |

Note: The domain competencies are drawn relatively higher than the corresponding cross-domain competencies, whenever applicable. This is to show our belief that cross-domain competencies do not typically reach the height of project managers' own domain competencies. However, this proposition is outside the scope of our research.

We would like to bring to attention propositions 2a, 2b, and 2c, where some form of low cross-domain competencies is required for successful ISO projects. At first glance, the implications of these propositions (i.e., knowledge having a negative influence on outcome) appear to be counter-intuitive. We construct these propositions based on the following arguments:

- We take a “fixed-pie” approach to the project managers’ resources (time and effort)⁴¹. Project managers must focus their resources to carry out project management activities and tasks. In the case of project managers who stepped into their roles without any cross-domain competence, acquiring unnecessary knowledge that does not facilitate their performances implies that the project managers are utilizing their resources on unnecessary items. Hence, we have a less than optimal usage of the project managers’ limited resources.
- A recent study by Tiwana (2004b) established the danger of knowing too much. The study examined over two hundred software outsourcing projects. The study found that for routine (or simple) applications, “acquiring technical expertise in client organizations actually reduces the design effectiveness for the project” (p. 57). Meanwhile, for non-routine applications, “vendors with very high levels of business knowledge can sometimes be blind to the intricacies of the client’s problems and thus make assumptions that impede the integration of contextual knowledge during the development process” (p. 57). In short, having knowledge can at times prove to have a negative impact on ISO project success.

⁴¹ The “fixed-pie” approach to resources is parallel to the resource-based view and knowledge-based view theories (Section 2.1.2).

4.2.3 Propositions Concerning Leadership

There are two important dimensions in Quinn's leadership framework (Section 3.2.3.1), and each dimension contains two variations. The dimensions and their variations form four distinct quadrants (Table 5). In this section of the proposal, we assess how the characteristics of the different types of ISO relationships fit into a particular model/quadrant in Quinn's framework.

For a *support* type relationship, there are two primary components that we need to consider. These components are:

- (1) Extent of substitution is low, which implies that the switching cost is low (Section 3.3.6). The client project managers need to evaluate the costs and services delivered by the current vendors, and compare them to the market. The vendor project managers must ensure that their services remain competitive. In other words, both ISO project managers are required to monitor their external environments.
- (2) Outsourcing is restricted to low strategic impact IS functions, which implies that tasks are typically well defined.

Item (1) shows that project managers must have an *external focus*. Meanwhile, item (2) infers that project managers must be in the *control* mode since control is more suitable for tasks that are clear and well understood. External focus and control map into the *rational goal* model in Quinn's leadership framework.

Another supporting evidence is that cost is a major motivation for outsourcing and vendor selection. This corresponds well to the rational goal model where the emphasis is on profit and bottom line. Project managers are responsible for planning and setting goals, establishing clear expectations and seeking closure to projects since outcome-based

performance measurement is usually effective in this relationship. These tasks are classified as part of the *director* and *producer* leadership roles. This suggests that:

Proposition 3a: In a successful ISO project where the client and vendor engage in a *support type relationship*, the *client and vendor project manager will display high leadership roles in the rational goal model* (*directors* and *producers*).

Next, we examine ISO projects in *reliance* type relationship. Reliance projects are restricted to low strategic impact or commodity IS functions. As in the case of support relationships, low strategic impact IS functions are effectively managed through *control* mode. One significant difference however, is that reliance projects have high extent of substitution. Project managers must concentrate upon monitoring the existing projects, as opposed to monitoring their external environment. They are *internally focused*. Thus, we conclude that reliance relationships fall under the *control* and *internal focus* quadrant, or specifically the *internal process* model. Closer inspection of reliance relationships uncovers that project managers must function as *monitor* (e.g., monitor performance outcomes, gathering and disseminating information regarding the project) and *coordinator* (e.g., creating routine through rules, standards, and procedures, ensuring the routine is followed through, as well as scheduling and planning project activities). Based on these arguments, we posit that:

Proposition 3b: In a successful ISO project where the client and vendor engage in a *reliance type relationship*, the *client and vendor project manager will display high leadership roles in the internal process model* (*monitors* and *coordinators*).

Moving to *alignment* type relationship, we see that its general characteristics include being low on the extent of substitution but high on strategic impact. Previous

discussions of support type relationship highlighted the rationale that low extent of substitution indicates *external focus* leadership. For ISO projects comprising of high strategic impact or core IS functions, the tasks are ambiguous and not well defined. Project managers must perform in the *flexibility* mode to be effective. Furthermore, since the primary motivation for outsourcing is to gain world-class technical expertise, project managers must be aware of available external resources and maintain networks of external contacts (i.e., *broker* role). Project managers must also facilitate and encourage changes since ISO project outcomes are usually uncertain, ambiguous, and dynamic. Hence, we posit that:

Proposition 3c: In a successful ISO project where the client and vendor engage in an *alignment type relationship*, the *client and vendor project manager will display high leadership roles in the open systems model (innovators and brokers)*.

Our final type of ISO relationship is *alliance*, where the extent of substitution and strategic impact are both high. The mapping onto Quinn's leadership framework corresponds to the *internal focus* and *flexibility* quadrant. Looking at the project managers in alliance relationships, their utmost responsibilities are to develop and foster trust, commitment, and mutual understanding, encourage participative decision-making and information sharing, as well as build common objectives and goals. These tasks are all part of the *mentor* and *facilitator* leadership roles under the *human relations* model. Hence, we posit that:

Proposition 3d: In a successful ISO project where the client and vendor engage in an *alignment type relationship*, the *client and vendor project manager will display high leadership roles in the human relations model (mentors and facilitators)*.

Finally, we would like to bring to attention that our leadership related propositions are not “either or” circumstances. In other words, the fact that project managers display high leadership roles in one quadrant does not imply that they will not perform other roles altogether, or perform these other roles at low intensities. According to Quinn (1991), managers will play the roles in each quadrant at one point in time, or perform them concurrently. For example, a project manager in successful support relationship will display high director and producer roles. Nonetheless, this particular project manager will also exhibit other roles from low, moderate to high intensities. It is also possible that this project manager perform all roles at high intensity. Quinn (1991) categorizes performing all roles at high intensities as being the most effective type of leaders, and labels it as the “master” leader.

Table 13 summarizes the justifications we used for each proposition concerning ISO project managers and their leadership roles.

4.3 Chapter Summary

In Chapter 4, we discussed the theoretical model and propositions. These propositions are derived from several theories commonly utilized in ISO research. The next chapter outlines a framework to test the theoretical model and its propositions.

Table 13: ISO Relationships & Justifications for Leadership Propositions

| ISO Relationship | Justifications | Mapping onto Quinn's Leadership Framework |
|------------------|--|--|
| Support | <ul style="list-style-type: none"> ▪ Extent of substitution is low, which implies that project managers from both sides must monitor external environment for benchmarking purposes, and finding best offers. ▪ Outsourcing is restricted to commodity IS functions, which implies that tasks are typically clear and well defined. ▪ ISO project is an economic tool, where the emphasis is on profit and bottom line. ▪ Client and vendor project managers must plan and set goals, establish clear expectations, as well as seek closure to projects since outcome-based performance measurement is usually effective in this relationship. | <ul style="list-style-type: none"> ▪ ISO project maps into the <i>external focus and control</i> quadrant. ▪ Client and vendor project managers display high <i>rational goal (director and producer)</i> leadership roles. |
| Reliance | <ul style="list-style-type: none"> ▪ Extent of substitution is high, which implies that project managers from both sides must focus on monitoring existing projects; they must always “be in the know” for smooth transitions when contracts expire. ▪ Outsourcing is restricted to commodity IS functions, which implies that tasks are typically clear and well defined. ▪ Client and vendor project managers are responsible for: <ul style="list-style-type: none"> ❖ Creating rules, procedures and standards; ensuring that these items are met. ❖ Monitoring performance and project outcomes. ❖ Continuous scheduling and planning before the end of the project. ❖ Gathering and disseminating information regarding the project. | <ul style="list-style-type: none"> ▪ ISO project maps into the <i>internal focus and control</i> quadrant. ▪ Client and vendor project managers display high <i>internal process (monitor and coordinator)</i> leadership roles. |
| Alignment | <ul style="list-style-type: none"> ▪ Extent of substitution is low, which implies that project managers from both sides must monitor external environment for benchmarking purposes, and finding best offers. ▪ Outsourcing involves core IS functions, which implies that tasks are ambiguous and not well defined. ▪ The primary motivation for outsourcing is to gain technical expertise; therefore, project managers must be aware of available external resources and maintain networks of external contacts. ▪ Client and vendor project managers must facilitate and encourage changes since ISO project outcomes are usually uncertain, ambiguous, and dynamic. | <ul style="list-style-type: none"> ▪ ISO project maps into the <i>external focus and flexibility</i> quadrant. ▪ Client and vendor project managers display high <i>open systems (innovator and broker)</i> leadership roles. |
| Alliance | <ul style="list-style-type: none"> ▪ Extent of substitution is high, which implies that project managers from both sides must focus on monitoring existing projects. ▪ Outsourcing involves core IS functions, which implies that tasks are ambiguous and not well defined. ▪ Client and vendor project managers are responsible for: <ul style="list-style-type: none"> ❖ Developing and fostering trust, commitment, and mutual understanding. ❖ Encouraging participative decision-making and information sharing; maintaining open communication channels. ❖ Creating common objectives and goals. | <ul style="list-style-type: none"> ▪ ISO project maps into the <i>internal focus and flexibility</i> quadrant. ▪ Client and vendor project managers display high <i>human relations (mentor and facilitator)</i> leadership roles. |

Note: Both the justifications and mapping to Quinn's leadership framework pertain to both the client and vendor project managers.

CHAPTER 5: PROPOSED EMPIRICAL INVESTIGATION FRAMEWORK

In this chapter we present an investigation framework using the case study research strategy. This framework can be utilized to empirically test the theoretical model and its propositions. The following section discusses the suitability of choosing the case study approach. Next, we describe our philosophical assumptions and research design (e.g., unit of analysis, case selection, data collection, etc.). We also offer a brief overview of the recommended techniques to alleviate the validity and reliability issues in research. This chapter ends with an overall chapter summary.

5.1 Suitability of the Case Study Research Strategy

The two most favoured methods in IS research are the survey and case study methods (Ayanso et al. 2007; Palvia et al. 2004). We opted to recommend the case study method due to the following reasons:

- *The exploratory nature of our study.*

The case study is a reputable research method in the field of IS, especially when research and theory are still at a formative stage. As stated by Benbasat et al. (1987, p. 371), “[C]ase studies are more suitable for the exploration, classification, and hypothesis development stages of the knowledge building process; the investigator should have a receptive attitude towards exploration.”

The theoretical model and propositions presented in our study are *exploratory* in nature. Previous studies have made casual observations regarding the competent project manager who “makes a difference” and is usually “the driver of the wider relationship between client and supplier organizations” (Feeny et al. 2006, p. 110). However, concrete

empirical work has never been conducted. ISO literature rarely addresses individual level competencies, and links these competencies to ISO project outcomes. The initial managerial competencies we adopt as part of our theoretical framework act as a starting point.

Moreover, our theoretical model maps ISO relationship types (Kishore et al. 2003; Nam et al. 1996) onto the Quinn's leadership framework (1991). The low and high extent of substitution translates to external and internal focus leadership quadrants, respectively. Meanwhile, the low and high strategic impact matches the control and flexibility mode leadership quadrants. Although previous research has applied the Quinn's leadership framework, none has mapped the ISO relationship types onto the leadership quadrants.

- *The strength of the case study strategy in answering the “how” and “why” questions.*

The case study approach is also considered more suitable in dealing with questions framed as “how” questions that require *explanatory* answers (Dubé & Paré 2003; Yin 2003; Benbasat et al. 1987). This is because data from a case study will enable us to create “operational links [needing] that can be traced over time, rather than mere frequencies or incidence” (Yin 2003). The primary motivation of our study is to explain the relationship between managerial competencies and ISO project success. Some of the key questions include: (1) *how* the presence of managerial competencies facilitates desirable ISO project outcome? And (2) *how* ISO characteristics influence the relationship between managerial competencies and ISO project outcome?

In conclusion, considering both the *exploratory* and *explanatory* nature of this research, we view the case study strategy as the more appropriate selection and suggest it as part of our empirical investigation framework.

5.2 Philosophical Assumptions

While case study method could follow the positivist, interpretivist⁴², or critical⁴³ tradition, our proposed empirical investigation framework is based on the *positivist* tradition. Dubé & Paré's (2003, p. 604) stated that "[E]pistemologically, positivist studies are premised on the existence of a *priori* fixed relationships with phenomena capable of being identified and tested via hypothetico-deductive logic and analysis. Causal relationships, which are the basis for generalized knowledge, can predict patterns of behaviour across situations." Simply said, a positivist case study involves a set of pre-defined propositions that can be empirically tested (i.e., the propositions consist of measurable constructs). Several other researchers also adhere to this terminology in defining positivist case studies (Yin 2003; Eisenhardt 1989; Lee 1989; Benbasat et al. 1987).

Following the positivist tradition, we have developed a theoretical model along with a set of testable propositions. We also recommend an empirical investigation framework that can be utilized to test these propositions.

5.3 Case Study Design

Even though the multiple-case design requires extensive resources and time, evidence from multiple-case designs are "often considered more compelling, and the

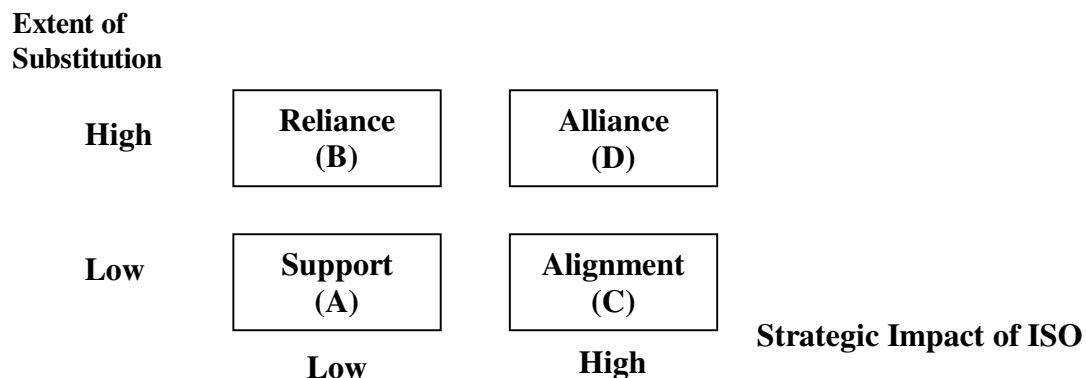
⁴² The interpretivist tradition maintains that people, and the physical and social artifacts that they create, are fundamentally different from the physical reality examined by natural science. The same physical artifact, the same institution, or the same human action, can have different meanings for different human subjects. The observing social scientist must examine this reality in terms of what it means to the observed people (Lee 1991).

⁴³ Critical case study maintains that "reality is socially constructed, similar to the interpretivist perspective; however, the goal in critical research is to bring about social change through critique of social conditions" (George 2006, p. 102).

overall study is therefore regarded as more robust” (Yin 2003, p. 46). The word holistic on the other hand infers a single unit of analysis within each case. In our study, the unit of analysis for each case is the ISO project (Section 5.3.1).

The 2 x 2 matrix is based on the variations of strategic impact and extent of substitution characteristics (Table 9). Figure 3 represents our proposed case study design. Each case is classified in the following context: (1) low strategic impact and low extent of substitution (A – supplier), (2) low strategic impact and high extent of substitution (B – reliance), (3) high strategic impact and low extent of substitution (C – alignment), and (4) high strategic impact and high extent of substitution (D – alliance).

Figure 3: Proposed Case Study Design



5.3.1 Unit of Analysis

The unit of analysis for each case is the ISO project, since we evaluate success on per project basis. We define a project as a temporary endeavour undertaken to create a unique product or service. A project has measurable, tangible, or verifiable outcome to indicate its completion, as well as responsibilities such as budgeting, scheduling, and

planning (Haag et al. 2006). For an ISO project, at least two parties are involved, with the client contracting out an IT/IS service(s) to the vendor.

5.3.2 Case Selection

There is no commonly accepted rule for the number of cases to be included in a case study. For example, Lee (1989) favours a single-case approach focusing on a revelatory, critical or unique case; Eisenhardt (1989) recommends four to ten cases; Miles and Huberman (1994) suggest an upper limit of fifteen. “The goal in picking the number of cases is not to reach a preset number, but to identify enough cases to get as complete understanding of the phenomenon as possible” (George 2006, p. 110).

We suggest two categories of case selection methods. The first category reflects Yin’s (2003) *theoretical replication* strategy, which implies contrasting results between the cases but for predictable reasons (based on the propositions). We recommend four cases in this category. Each case will represent a successful ISO project (Table 11) from one of the relationship types – supplier, reliance, alignment, and alliance. The managerial competencies for project managers in each relationship type will vary based on our propositions (Section 4.2.1 – 4.2.3). For example, we expect the client and vendor ISO project managers in a successful support type relationship to have high domain competence, low cross-domain competence, and high rational goal leadership skills.

The second category consists of unsuccessful ISO projects. As in the first category, this category also contains four cases in total. Each case will represent an unsuccessful ISO project specific to a particular ISO relationship type. The selection of unsuccessful ISO projects acts as *control cases*. Similar to control cases in experimental studies, the control cases in this analysis framework will provide more credible and stronger argument in

establishing the operational links between managerial competencies and ISO project outcome (Trochim 2001). We expect the managerial competencies of the client and vendor project managers in unsuccessful ISO projects to contradict our propositions. If the managerial competencies actually match the propositions, we expect to find factor(s) other than competencies that influence the ISO project outcomes. However, if there is no indication of such factor(s), we will need to re-evaluate our propositions accordingly based on the new evidence.

To determine the suitability of potential cases, we recommend an initial screening process using the questions provided in Appendix C. The questions related to project background and project outcome are adapted from Grover et al. (1996), while questions related to ISO relationship type are adapted from Kishore et al. (2003). The project background questions are open-ended, while the rest require ratings based on a scale of one to five. The classification of successful versus unsuccessful for project outcome, high versus low strategic impact, and high versus low extent of substitution can be done by means of absolute value⁴⁴ or relative value⁴⁵ computations.

Other important considerations in deciding whether to include or exclude a particular case are:

- *The project must be completed projects or near completion.*

Completed projects must have completion dates not exceeding two months of data collection. Nearly completed projects must have gone through user testing phase (e.g.,

⁴⁴ We can set a limit for absolute rating. For example, an average score below neutral (three) is considered unsuccessful/low; an average score above neutral is considered successful/high.

⁴⁵ One way to conduct relative ranking is to list the cases based on their scores for each category (i.e., project outcome, strategic impact, extent of substitution), and compare these scores between cases to determine successful/unsuccessful and high/low.

currently in parallel run, waiting for hand-over, or going through warranty period). The selection of organizations is not restricted by industry type, organizational size, or location.

- *The availability of key informants and project documents as sources of evidence.*

We propose data collection by interviewing the client project manager, the vendor project manager, and an additional project team member. The last key informant must be a person who is able to evaluate the project outcome and performances of both project managers. In addition, we also recommend reviewing minutes of meetings and project reports. The selection to include a certain case must take into consideration the ability to secure interviews, and consent for release of project documents.

5.3.3 Data Collection & Analysis

We propose project documents such as minutes of meetings and progress reports as the first source of evidence in our analysis framework. We must first review these documents to: (1) understand the jargons and identify the key team members in the project and modify our overall questions accordingly (e.g., addressing the team members by their names), (2) identify some of the key issues that occurred throughout the project and ask detail questions (e.g., question 21 in Appendix D, and question 6 in Appendix F), and (3) corroborate certain key information (e.g., project progress, communication frequency, tasks, responsibilities, etc.).

After the initial document review stage, the investigators will need to conduct a series of one-on-one interviews with at least three key team members from each project. The interviews will involve the client project manager, the vendor project manager, and a project team member who is able to evaluate both project managers. The client and vendor project managers must satisfy the following conditions: (1) the person who is responsible

for typical project management tasks such as monitoring project progress, scheduling, and allocating resources, (2) the person who liaise with the representative(s) from the other firm, and (3) has been the project manager for at least 75% of the project duration. The interview with each project manager is estimated to be 90 minutes.

Meanwhile, the additional project team member must be a person who is able to gauge the outcome of the project and the performances of both project managers. This person must be an active participant during the course of the project, in that he/she attended project meetings and was included in most of the communications between the client and vendor firms. The interview with each project team member is estimated to be 60 minutes.

The sample interview protocols for project managers and team members are included in Appendix D and Appendix F, respectively. Most of the questions are newly created except for the questions related to communication and relationship constructs, which are adapted from Reich (1992). Two experienced researchers in the MIS field had reviewed these questions, and we had made changes based on their comments. However, we suggest at least one pilot study to be conducted before actual data collection since the pilot case study will help to refine the “data collection plans with respect to both the content of the data and the procedures to be followed” (Yin 2003, p. 79).

Eisenhardt (1989, p. 538) stated that qualitative data in a case study “can keep researchers from being carried away by vivid, but false, impressions in qualitative data, and it can bolster findings when it corroborates those findings from qualitative evidence.” Thus, apart from the primarily qualitative data from project documents and interviews, we include the collection of quantitative data in the form of a questionnaire. The questionnaire focuses on questions to gauge managerial competencies. Project managers from both client

and vendor sides will rate themselves, as well as their counterparts from the client/vendor firms. The instruments to measure business competence, IT competence and leadership among project managers are adapted from Bassellier & Benbasat (2004), Bassellier et al. (2003), and Quinn (1991), respectively. As in the case of project outcome and ISO relationship type, the level of managerial competencies can be evaluated by means of absolute value or relative value computations.

Yin (2003, p. 69) advises that researchers applying the case study strategy to create “a guide for the case study report (outline, format for the data, use and presentation of other documentation, and bibliographical information)” before embarking on data collection. Miles and Huberman (1994) also echo this advise via the creation of a pre-structured case outline. They further argue that a pre-structured case outline will enable investigators to “focus and streamline data collection and analysis that are quick and clean, and will provide trustworthy results” (pp. 83 – 84). Following these recommendations, we provide a case study report outline in Appendix G.

An important step we like to stress in data analysis is to have informants review drafts of the case study reports. Here, we propose the project team members to conduct the reviews. To have drafts reviewed by all informants will most likely be impractical. More importantly, since the project managers are the ones being evaluated, we view the team members as more able to provide objective feedbacks.

5.3.4 Validity & Reliability Issues

Our analysis framework attempts to alleviate the validity and reliability concerns in research. Table 14 displays several strategies that we propose as proof of rigor as per

positivist case research. The strategies are based on suggestions found Yin (2003), Eisenhardt (1989), and Benbasat et al. (1987).

Table 14: Rigor of the Analysis Framework as Per Positivist Case Research Criteria

| Issue | Suggested Strategies |
|---------------------------|--|
| Construct validity | <ul style="list-style-type: none"> ▪ Use multiple sources of evidence including interviews with several key informants, reviewing project documents, as well as collecting both quantitative and qualitative data. ▪ Establish key chain of evidence by creating documents to verify the links between survey/interview questions and constructs (Appendix H). ▪ Request for third-party informants to review site reports. ▪ Conduct a pilot study to ensure the quality of the data to be collected through the case study protocol. |
| Internal validity | <ul style="list-style-type: none"> ▪ Pattern match the empirical evidence from data collection to predictions derived from falsifiable propositions (during data analysis stage). ▪ Use explanation building (during data analysis stage). |
| External validity | <ul style="list-style-type: none"> ▪ Apply theoretical replication strategy in case selection. |
| Reliability | <ul style="list-style-type: none"> ▪ Create a case study database to store notes, questions, interview transcripts, etc. ▪ Create a case study protocol through an evolving set of questions based on expert reviews and pilot study. |

5.4 Chapter Summary

In Chapter 5 we presented our proposed empirical investigation framework. We discussed the suitability of the case study strategy and the various elements and steps of the research design. This sets the stage for the discussion on implications and contributions in the final chapter.

CHAPTER 6: DISCUSSION

In this chapter, we discuss the contributions of this thesis and conclude with a discussion of future research opportunities.

6.1 Contributions

ISO has important economic and strategic values in current businesses. Market report shows that the current worldwide ISO market is worth more than USD\$200 billion. ISO has also spawned a new industry related to managing outsourcing contracts, which is now worth more than USD\$20 billion. For individual client firms, successful ISO could imply economic, strategic, and technical advantages. Unfortunately, ISO projects are marred with high failure rates. Industry observations and academic reports cited the lack of managerial competencies as one of the key factors of ISO failures. Despite the importance of ISO in general and the importance of managerial competencies in determining ISO project outcomes, research related to this topic is scant and fragmented.

Our study develops a theoretical model and proposes an empirical investigation framework to determine managerial competencies in successful ISO projects. The theoretical contributions of our study are:

- To develop our theoretical model, we conducted a review of knowledge-related studies in ISO literature. Guided by KM ontology (Holsapple & Joshi 2004), we analyzed past ISO literature and successfully identified several areas of ISO research where theoretical gaps exist (Section 2.3). Our study furthers current understanding of the role of knowledge as a required resource to execute ISO activities at the individual context. Future researchers are recommended to explore several other potential areas.

- Our literature review shows that prior studies of ISO managerial competencies have not examined the relationship between competencies and ISO outcomes. Only Erickson and Ranganathan (2006) explored this particular link. However, their study focused on project management competencies, and did not offer any theoretical justification to support (or explain) the relationship. Our study on the other hand, provides a theoretical model linking managerial competencies to ISO project success. We developed our model by utilizing several theories from ISO literature as well as the Quinn's leadership framework (1998) from the strategic management literature.
- We put forward a comprehensive inventory of ISO managerial competencies for both clients and vendors. In building this inventory, we integrated the findings from past studies, added a new element on IT standards to reflect the current ISO climate, and elaborated on the leadership aspect of ISO managerial competencies. Our leadership dimensions are based on the Quinn's leadership framework (1991). According to our literature review of leadership/managerial frameworks (Appendix B), we deem the Quinn's leadership framework (1991) as the most comprehensive one available.
- Our study also recognizes the intricacies of ISO projects. Each project has certain characteristics in term of the extent of substitution, and the IS function being outsourced (Section 3.3.6). The extent of substitution is the degree to which the control and ownership of various IT/IS functions have been transferred to vendor firms. A high extent of substitution infers that a high degree of control and ownership have been transferred. Client firms are more reliant on vendor firms. Meanwhile, the IS function being outsourced can be classified as having either high strategic impact on the performance of client firms, or low strategic impact. High strategic impact IS functions

are those involving highly specialized knowledge. Our theoretical model acknowledges that depending on these characteristics, some areas of competencies are more important than others.

We deliver a set of propositions to predict the managerial competencies required for successful ISO outcomes. The managerial competencies encompass both the client and vendor firms. Based on our propositions, different patterns of managerial competencies emerge in different types of ISO projects. In developing our propositions, we rely upon several theories. These theories include those that stem from economics (*Transaction Cost Economics* and *Agency Theory*), strategic management (*core competence* and *Resource-based View*), and social (*Relational Exchange Theory* and *Social Exchange Theory*) perspectives. Additionally, we utilized the Quinn's leadership framework (1991) to support the propositions related to leadership behaviours.

We also propose an empirical investigation framework to test the model and its propositions. Our proposed framework employs the case study strategy. We offer several measures to alleviate the validity and reliability issues in positivist research.

Empirical research based on our theoretical model and investigation framework will answer the following questions:

- (1) What are the managerial competencies required in client and vendor firms involved in ISO projects? What are the managerial competencies required in client and vendor firms involved in a specific type of ISO relationship?
- (2) Are the areas of managerial competencies different for client firms compared to vendor firms? If yes, how are they different in general? How are they different within each

type of ISO relationship? Does the relevant managerial competencies in clients and vendors need to complement each other?

- (3) Are the areas of managerial competencies for a pair of client-vendor project managers working in one type of ISO project different compared to pairs working in other types? If yes, how are they different?

The answers to the above questions yield a few managerial implications. Client firms planning to embark on ISO projects can use the results as an assessment toolkit. These firms can conduct internal evaluations to determine whether they have the required managerial competencies to engage in ISO projects, or decide to engage in projects in which they have the needed managerial competencies.

Another possibility is for client and vendor firms to develop different aspects of competencies depending on the type of ISO projects they are engaged in. The development can be carried through by solidifying internal managerial competencies via training, or by acquiring the needed competencies outside of the organizational boundaries via recruitment process. Answering the above questions will enable firms to identify the person(s) within their organization with the required set of competencies, and assign this person(s) to the task of managing the ISO projects.

6.2 Future Research Directions

We believe that the first step in future research directions is to empirically test our theoretical model using the empirical investigation framework provided. Due to current level of theoretical and empirical understanding, we are unable to provide propositions at the dimensional levels for business competence (Table 3), IT competence (Table 4), and ISO project success (Table 11). Nevertheless, we believe that data from the proposed case

study will enable further refinements to the theoretical model such that we can establish dimensional level propositions⁴⁶. Afterwards, a quantitative survey based on the refined theoretical model can be conducted for confirmation and generalization to a larger population.

Apart from this, our study can be complimented through several ways. First, by examining the knowledge residing in teams. Our study examines individual project managers. Future research can focus on developing propositions for project teams, and find ways to aggregate the relevant competencies.

Second, we can develop propositions for other team members. A few of the key team members include project director, technical staff, and primary users (especially those who are also project owners).

Third, future research can investigate the relationship between managerial competencies and ISO project success in specific context such as offshore outsourcing. An offshoring project has the geographical and cultural aspects adding to its complexity level. These elements need to be taken into consideration when developing the theoretical model.

6.3 Final Summary

The goals of our study are to develop a theoretical model and an empirical investigation framework to explore the relationship between managerial competencies and ISO project outcomes. We achieve our goals by first, reviewing past knowledge-related ISO studies; and second, constructing a theoretical model by integrating the results from prior studies. The link between managerial competencies and ISO project outcomes is explained through several theoretical perspectives – economics (*Transaction Cost*

⁴⁶ The leadership propositions are posited at the dimension level.

Economics and Agency Theory), strategic management (*core competence* and *Resource-based View*), and social (*Social Exchange Theory* and *Relational Exchange Theory*). Our proposed empirical investigation framework is based on the case study strategy. We also include the screening questions, interview protocols, and survey instrument (for quantitative assessment of competencies). The findings from future empirical work based on our model and framework will have theoretical and managerial implications.

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Appendices

Appendix A: Summary of Knowledge-Related ISO Literature⁴⁷

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements ⁴⁸ | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|--------------------------|--|----------------|-----------------|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Loh & Venkatraman (1992) | Presents and tests a framework examining factors that influence the degree of ISO. Degree of ISO is positively related to business and IT cost structures; Degree of ISO negatively related to IT performance. | Secondary Data | None | Business competence (<i>Business cost structure, business performance</i>); <i>IT competence (IT cost structure, IT performance)</i> . | C | √ | | | | | | |
| Quinn & Hilmer (1994) | Proposes a strategy for firms to determine their core competencies, select candidates for outsourcing, and maintain control over firms' future directions after outsourcing. | Theoretical | Core competence | Firms' skills and knowledge sets. | C | √ | | | | | | |

⁴⁷ The classifications for these studies (highlighted columns) are based on the classification for the roles of knowledge in ISO literature (Figure 2).

⁴⁸ The italicized constructs are those that are found to be statistically significant in positivist empirical studies, or newly discovered in interpretive studies.

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-------------------------|---|-----------------------|-----------------|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Collins & Millen (1995) | Examines factors that influence the degree of ISO, decisions to outsource, impact of ISO on client firms, and clients' future ISO plans. | Survey | Core competence | <i>Focus on core competence; Access to technology/ skills; Qualifications of vendor personnel; Loss of IS strategic planning capability; Vendor's knowledge of client's business.</i> | C | √ | | | | | | |
| McLellan et al. (1995) | Inductive approach in identifying the motivations behind outsourcing core activities. | Interview; Case study | None | <i>Mitigating IS risks and uncertainty; Accessing new technology; Improving IS management.</i> | C | √ | | | | | | |
| Earl (1996) | Based on discussions with client and vendor firms, the author proposes eleven risks of ISO for client firms. He recommends executives to consider these risks in deciding how to manage their ISO | Proposition | None | <i>Inexperienced staff; Outdated technology skills; Lack of organizational learning; Loss of innovative capacity.</i> | C | | | | √ | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------------|--|-------------------|-----------------|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | agreements. | | | | | | | | | | | |
| Michell & Fitzgerald (1997) | Examines vendor characteristics in the market place and vendor-related factors in vendor selection process. | Interview; Survey | None | <i>Vendor capabilities; Technical expertise; Client capabilities.</i> | C; V | √ | √ | | | | | |
| Saunders et al. (1997) | Identifies the moderators for the relationship between contracts (tight, loose) and ISO project success. The type of ISO functions being outsourced (core, non-core competencies) acts as a moderator; Acquisition of new skills and technology is one dimension of success. | Survey | Core competence | <i>Core competencies; Acquisition of new skills and technology.</i> | C | | | | √ | | | √ |
| Currie & Willcocks (1998) | Identifies the types of ISO engaged by firms based on expenditures, and the justifications behind these | Case study | Core competence | <i>Focus on core competencies; Developing sector specific knowledge;</i> | C | √ | | | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-------------------------------|--|------------|---|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | decisions. | | | <i>Access to technical skills/expertise; Level of in-house expertise; Retaining in-house technical skills/expertise.</i> | | | | | | | | |
| DiRomualdo & Gurbaxani (1998) | Proposes a typology of the benefits expected from ISO. The typology contains four levels of IS improvement via four levels of IS resources and skills improvement. | Interview | None | <i>Upgrade IT skills; Introduce new IT skills; Transform IT skills.</i> | C | √ | | | | | | |
| Feeny & Willcocks (1998) | Develops a set of core competencies for client firms. These competencies include those that client firms need to engage in successful ISO. | Case Study | Resource-based theory; Core competence. | Informed buying; Contract facilitation; Contract Monitoring; Vendor development. | C | | √ | | | | | |
| Poppo & Zenger (1998) | Develops and tests competing hypotheses regarding boundary choice | Survey | TCE; Knowledge-based view; agency theory; institutional | <i>Asset specificity; Technological uncertainty;</i> | C | √ | | | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|------------------------|---|-------------|------------------------------------|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | and governance performance. | | theory; Production cost. | <i>Magnitude of skill set required.</i> | | | | | | | | |
| Smith et al. (1998) | Examines key drivers for firms to engage in large-scale ISO agreements. | Survey | Core competence | Focus on core competencies. | C | √ | | | | | | |
| King & Malhotra (2000) | Developing a framework that examines the advantages and disadvantages of IS sourcing options. | Theoretical | Internal markets; Core competence. | Core competencies; Learning Competencies. | C | √ | | | | | | |
| Baldwin et al. (2001) | Explains how and why an organization decides to engage in ISO. | Case study | Core competence | Access to technical competency; Need to ensure core competencies remain internal; Difficulty to transfer core competencies to vendors. | C | √ | √ | | | | | |
| Goles (2001) | Develops and tests a large | Survey | Relational | <i>Vendor capabilities</i> | C; V | | √ | | | | √ | √ |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|---------------------|--|------------|--|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | framework examining client and vendor firms' competencies influence on partnership; And partnership influence on ISO success. | | exchange theory | <i>(technical, business, relationship management); Client capabilities (business, IT, relationship management).</i> | | | | | | | | |
| Lee (2001) | Develops and tests a set of hypotheses linking knowledge sharing, organizational capability, and partnership quality to ISO success. Findings show statistical significance (positive relationships) for all relationships hypothesized. | Survey | Knowledge sharing (knowledge management); Core competence; Social exchange theory. | None | C | | √ | | | | √ | √ |
| Roy & Aubert (2002) | Develops and tests a framework to predict the appropriate sourcing modes for firms; Data collection uncovers presence of knowledge-related resources. | Case study | Resource-based view | <i>Technical expertise; Change management expertise; Business process expertise.</i> | C | √ | | | | | | √ |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|--------------------------|--|----------------|---|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Levina & Ross (2003) | Identifies a set of core competencies in vendor firms that complements client firms' competencies. Vendors need to share these competencies with their clients to provide additional benefits to their clients; Thus improving client-vendor relationship, increasing client satisfaction, and increasing vendor overall reputation. | Case study | Complementarity (Economics); Core competence; Knowledge sharing (knowledge management). | <i>IT personnel career development; client relationship management; Methodology development and dissemination.</i> | C; V | | | | √ | √ | | √ |
| Qu & Brocklehurst (2003) | Develops and analyzes a framework based on TCE to determine reasons behind China's failure to compete with India in attracting offshore outsourcing from developed countries. Asset specificity is interpreted from the vendors' perspectives. | Secondary Data | <i>TCE</i> | <i>Asset specificity</i> | V | √ | | | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------|--|------------------------|--|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Aubert et al. (2004) | Develops and tests a framework to determine factors that influence the level/degree of ISO in firms. The factors focus on characteristics of ISO behaviour derived from TCE. | Survey; Expert ranking | TCE | Asset specificity; Business skills; Technical skills. | C | √ | | | | | | |
| Babbitt et al. (2004) | Develops a set of hypotheses to determine factors that influence firms' decisions to outsource. Factors focus on human resource characteristics. | Theoretical | None | IT skills portfolio in client firms; IT skills availability in market place; IT skills required for the project. | C | √ | | √ | | | | |
| Koh et al. (2004) | Identifies the obligations that need to be fulfilled by client and vendor firms in order for ISO to be considered as successful. Two knowledge-related obligations appear – knowledge transfer | Interview; Survey | Psychological contracting theory; Knowledge transfer (knowledge management); Knowledge sharing (knowledge management). | None | C; V | | | | | √ | | √ |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------|--|-------------|--|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | (vendors must educate clients in term of skills, knowledge and expertise to use the outsourced system or service), and knowledge sharing (clients must provide vendors with industry and business knowledge to operate or build the system). | | | | | | | | | | | |
| Peppard & Ward (2004) | Identifies core IS capabilities for firms. Proposes supply competence for firms engaging in ISO project; this includes supplier relationship and technology acquisition competencies. | Theoretical | Resource-based view; Core competence. | Supply competence – <i>supplier relationship; technology acquisition.</i> | C | | √ | | | | | |
| Tiwana (2004a) | Identifies the positive relationships between knowledge integration and software development performance. Knowledge | Survey | Knowledge integration (knowledge management) | Business knowledge; Technical knowledge. | C; V | | | | | √ | | √ |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|----------------------|---|------------|---------------------|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | integration is defined as the ability to include expertise and skills from different stakeholders. Two types of knowledge are identified – application domain knowledge from customers, and technical knowledge from vendors. | | | | | | | | | | | |
| Tiwana (2004b) | Identifies the types of project (based on product novelty and process novelty criteria) most suitable for different compositions of business and technical knowledge. Statistically significant relationships are found, but no justifications are given for the results. | Survey | None | Business knowledge for software development; Technical knowledge for software development. | C; V | | | | | √ | | √ |
| Aubert et al. (2005) | Identifies various ISO risks based on literature review, and uses data from case studies of five ISO | Case study | TCE; Agency theory. | Loss of organizational competencies | C | | | | √ | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|------------------------|--|--------|---|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | projects to illustrate how these risks are managed. The knowledge-related construct in this study is a dependent variable. | | | | | | | | | | | |
| Beimborn et al. (2005) | Compares factors influencing decision to outsource between banking and non-banking sectors. Finds significant difference in terms of economies of skills important for banking sectors. | Survey | None | <i>Economies of skills.</i> | C | √ | | | | | | |
| Ko et al. (2005) | Identifies the antecedents of knowledge transfer from consultants to clients in a large-scale ISO environment. Results show that communication competence in client and vendor employees influence knowledge transfers. Study uses | Survey | Knowledge transfer (Knowledge management) | <i>Communication competence (Communication encoding, communication decoding, source credibility).</i> | C; V | | | | | √ | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-------------------------|---|-------------|--|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | matched-pair survey method. | | | | | | | | | | | |
| Miranda & Kavan (2005) | Develops a conceptual framework to explain how formal contract influences post-contractual (relationship) contract, and how post-contractual contract influences value capture and value creation between client and vendor firms. The knowledge-related construct in this study is a dependent variable. | Theoretical | Promissory contract; Psychological contract; Inter-organizational rents. | Intellectual capital as part of firms' assets; Retention of core competencies. | C; V | | | | √ | | | |
| Shi et al. (2005) | Develops a survey instrument to measure ISO managerial competence in client project managers. | Survey | Knowledge management; TCE; Agency theory. | Informed buying; Contract facilitation; Contract monitoring; Vendor development. | C | | | √ | | | | |
| Willcocks et al. (2005) | Identifies core IS competencies/capabilities | Case study | <i>Core competence</i> | Core competence for client firms – | C | | √ | | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-------------------------------|--|------------|---|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | for firms. Three of these competencies are related to outsourcing – informed buying, contract facilitation, and contract monitoring. | | | <i>informed buying; contract facilitation; contract monitoring.</i> | | | | | | | | |
| Chua & Pan (2006) | Explains how companies should manage knowledge transfers when engaging in offshore insourcing. Identifies the types of knowledge that must be transferred for two types of projects – business application and infrastructure service. | Case study | Knowledge transfer (knowledge management) | Technical knowledge; Application domain knowledge; IS application knowledge; Organizational knowledge; IS development knowledge. | C; V | | | | | √ | | |
| Erickson & Ranganathan (2006) | An exploratory study; Identifies three key capabilities for client project managers involve in offshore outsourcing projects. | Case study | Resource-based view; Dynamic capabilities | Planning and control capability; Project governance capability; Team management capability. | C | | | √ | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------------|---|------------|-------------------------------------|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Feeny et al. (2006) | Identifies three major competencies required in vendor firms. Authors propose client firms to look for vendors with these competencies during the vendor selection process. | Case study | Core competence | Delivery competency; Transformational competency; Relationship competency. | V | | √ | | | | | |
| Franke & Gewald (2006) | Examines the impact of previous outsourcing experience on current outsourcing projects among project managers. Found that experience has significant influence on attitude. | Survey | None | <i>Previous outsourcing experience</i> | C | | | √ | | | | |
| Karlsen & Gottschalk (2006) | Examines the different leadership requirements between client and vendor project managers. Statistically significant differences found in leader, resource allocator, entrepreneur, and monitor | Survey | Mintzberg's managerial roles (1994) | Leader; Resource allocator; Spokesman; Entrepreneur; Monitor; Liaison. | C; V | | | √ | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------------|--|-------------------|-------------------------------|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | leadership roles. | | | | | | | | | | | |
| Loebbecke & Huyskens (2006) | Develops and tests hypotheses to determine factors that influence netsourcing decisions. Support found for strategic management constructs and not TCE constructs. | Survey | TCE; Strategic management | Technical specificity; Site specificity; Human capital specificity. | C | √ | | | | | | |
| Thomson & Venable (2006) | Identifies the factors for effective transitioning of IT staff from client to vendor firms; Unit of analysis is at the individual level. | Survey; Interview | Psychological contract theory | <i>Opportunity to develop new skills.</i> | C; V | | | √ | | √ | | |
| Willcocks et al. (2006) | Explains the knowledge flows in structural, human, and customer capitals between client and vendor firms during outsourcing in financial companies. Propose firms to take advantage of the | Case study | Knowledge management | Structural capital; Human capital; Customer capital. | C | | | | | √ | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-------------------|---|-----------|--|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | knowledge learned and created. | | | | | | | | | | | |
| Goo et al. (2007) | Develops and tests a framework to determine the duration of ISO partnership. Four predictors are found to be statistically significant: knowledge acquisition, relationship-specific investment, requirement uncertainty, and extent of substitution. | Survey | Absorptive capacity; Resource dependence; TCE; Social exchange theory. | <i>Knowledge acquisition</i> | C | √ | | | | | √ | |
| Taylor (2007) | Identifies risks for ISO project success from vendors' perspectives. Four major areas of risks are identified: in-house, outsourcing outcome, relationship and environment. | Interview | <i>Agency theory</i> | Wrong skills (staffing mismatched, lacking) of vendor, client, and other third-party (e.g., consultants); Client IT department skills – too much or too little; User skills. | V | | √ | | | | | √ |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|----------------------|--|------------|---|--|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| Tiwana & Keil (2007) | Examines whether peripheral knowledge (technical knowledge in client firms) influences control in alliance ISO projects. Peripheral knowledge influences outcome-based control, but not process-based control. | Survey | Knowledge management | <i>Peripheral knowledge</i> | C | | | | √ | | | |
| Wu et al. (2007) | Identifies and operationalizes additional knowledge (KVA) received by clients after ISO projects; Authors suggest KVA as a metric to determine outcome of ISO. | Case study | Knowledge management; Knowledge value added (KVA) | None | C | | | | | | | √ |
| Goles et al. (2008) | Identifies the mid-level skills desired by IT services firms. Study also identifies differences in skills requirements for entry-level and mid-level | Survey | None | Planning; Leadership; Relationship management; Risk management; Working with virtual | V | | | √ | | | | |

| Study | Summary | Method | Theory | Knowledge Constructs/ Elements | Perspective (C = Client; V = Vendor) | Knowledge as a factor influencing decisions | Required resource (org.) | Required resource (individual) | Knowledge influencing governance/mgmt. | Knowledge activities (Work process) | Knowledge activities (Partnership) | Outcome |
|-----------------------|--|--------|------------------------|---|--------------------------------------|---|--------------------------|--------------------------------|--|-------------------------------------|------------------------------------|---------|
| | employees in IT services firms. | | | teams; Negotiation; Industry knowledge; Functional area; Communication; Systems analysis; Systems design; IT architecture/ standards. | | | | | | | | |
| Han et al. (2008) | Develops and tests a framework examining client firms' competencies influence on partnership; And partnership influence on ISO success. | Survey | Social exchange theory | Technical and managerial IT capability; <i>Organizational relationship capability; Vendor management capability.</i> | C | | √ | | | | √ | √ |
| Rustagi et al. (2008) | Examines predictors of formal control usage by client firms on vendors in ISO projects. Technical knowledge and relationship management knowledge both have significant negative | Survey | <i>TCE</i> | <i>Technical knowledge; Relationship management knowledge; Degree of core competency involvement.</i> | C; V | | | | √ | | | |

| | | | | | | | | | | | | | | | | | | | | |
|--|--------------|------------------------------------|---------------|---------------|---|---|--|---------------------------------|---|---|--|---|----------------|--|--|--|--|--|--|--|
| | Study | | | | | | | | | | | | | | | | | | | |
| | | Summary | | | | | | | | | | | | | | | | | | |
| | | relationships with formal control. | | | | | | | | | | | | | | | | | | |
| | | | Method | | | | | | | | | | | | | | | | | |
| | | | | Theory | | | | | | | | | | | | | | | | |
| | | | | | Knowledge Constructs/ Elements | | | | | | | | | | | | | | | |
| | | | | | | Perspective (C = Client; V = Vendor) | | | | | | | | | | | | | | |
| | | | | | | | Knowledge as a factor influencing decisions | | | | | | | | | | | | | |
| | | | | | | | | Required resource (org.) | | | | | | | | | | | | |
| | | | | | | | | | Required resource (individual) | | | | | | | | | | | |
| | | | | | | | | | | Knowledge influencing governance/mgmt. | | | | | | | | | | |
| | | | | | | | | | | | Knowledge activities (Work process) | | | | | | | | | |
| | | | | | | | | | | | | Knowledge activities (Partnership) | | | | | | | | |
| | | | | | | | | | | | | | Outcome | | | | | | | |

Appendix B: Primer on Leadership Models and IS Research

Literature on the nature of managerial work has attempted to classify leadership behaviours (activities and roles) under different models. Exploring the behaviours that managers engage in to perform effectively in organizations has been a continuous challenge for researchers. Managers are expected to lead and manage teams, projects and organizations using innovative and dynamic strategies to ensure success.

In this brief report, we review five models of leadership behaviours. These models include: Mintzberg (1971; 1980), Stogdill (1974), Luthans and Lockwood (1984), Yukl (2002), and Quinn (1991). We then examine the streams of studies in IS literature that utilize these models in their research frameworks.

Mintzberg's Managerial Roles

In a classic observational study of five chief executives, Mintzberg (1971; 1980) provides an answer to the question “what do managers do?” He conceptualized the results into ten managerial roles. These roles are further classified into three higher-level categories that include: ***interpersonal*** (*figurehead, leader and liaison*), ***informational*** (*monitor, disseminator and spokesman*) and ***decisional*** (*entrepreneur, disturbance handler, resource allocator and negotiator*). Table 15 presents the complete summary of Mintzberg's managerial roles.

Although the results were derived from observing chief executives, Mintzberg (1980) argues through logic and empirical evidence that his managerial roles are generic in nature. In other words, the roles are applicable to managers in various levels of management and across different industries. Mintzberg (1980) further asserts that the

roles form a gestalt, or an integrated whole. He describes the managerial position as “an input-output system in which authority and status give rise to interpersonal relationships that lead to inputs (information), and these in turn lead to outputs (information and decisions). “One cannot remove one role and expect the rest to remain intact” (Mintzberg 1980, p. 58).

A more recent work by Mintzberg (1994) claims that variations in terms of preferences and execution styles of each role do exist. These variations occur due to the differences in management level, skills and expertise among managers, as well as the environment in which the managers function. Nonetheless, as asserted previously, all managers will perform all roles for as long as they remain in their managerial ranks.

Table 15: Summary of Mintzberg's Managerial Roles

| Role | Description | Examples |
|----------------------|---|--|
| Interpersonal | | |
| Figurehead | Symbolic head; performs duties that can be either routine or inspirational; duties can also be legal or social in nature. | Greeting visitors, officiating company ceremonies. |
| Leader | Relates to relationship with subordinates; responsibilities include formal staffing such as hiring, training, and promoting; responsibilities extend to informally motivating and criticizing subordinates. | All managerial duties involving subordinate. |
| Liaison | Establishes and maintains a network of external contacts and informants who provide favours and information. | Attending conferences and seminars; serving as a board member in the industry's association. |
| Informational | | |
| Monitor | Nerve center or focal point of all non-routine information; develops overall understanding of the organization and its external environment. | Reading journals, newsletters, and reports; observing plant operations and progress of projects. |
| Disseminator | Transmits information from external environment and other subordinates to subordinates; information can be of a factual or value nature; expresses organizational preferences as guidelines for subordinates in making decisions. | Forwarding important articles, news or customer complaints to subordinates; arranging for new company policies to be printed in the organization's newsletter. |
| Spokesman | Transmits information on organization's performance, policies, and plans; serves as a representative of the organization in the external environment. | Answering to stockholders, media or general public; lobbying for his organization's interests. |
| Decisional | | |
| Entrepreneur | Initiates and designs changes in the organization; looks for opportunities and potential problems to take action in the form of improvement projects. | Identifying areas that will increase organization's competitive advantage, holding review sessions for improvement projects. |
| Disturbance handler | Corrects problems that occasionally arise; introduces short-term adjustments or long-term policies to bring back and maintain equilibrium. | Holding strategy and review sessions to handle crisis. |
| Resource allocator | Allocates organization's resources that include scheduling, assigning tasks, and budgeting. | Scheduling personal daily tasks; assigning tasks to subordinates. |
| Negotiator | Participates in negotiation activities with external parties or organizations. | Negotiating contracts with vendors and customers. |

Source: The descriptions for the Mintzberg's managerial roles in Table 15 are based on the work of Mintzberg (1971, pp. 103-107; 1980, pp. 92-93).

Stogdill's Leadership Behaviours

Another important framework is the work by Stogdill (1974). The basis for this particular model is the Leader Opinion Questionnaire (LOQ), which was developed to measure a leader's attitudes about the desirability toward consideration and initiation of structure behaviours. Stogdill (1974) extends the LOQ to incorporate ten other behavioural measurements that encompassed: representation, demand reconciliation, tolerance of uncertainty, persuasiveness, tolerance of freedom, role retention, predictive accuracy, production emphasis, integration and influence with superiors. Table 16 describes the behaviours under for this framework.

Table 16: Summary of Stogdill's Leadership Behaviours

| Behaviour | Description |
|--------------------------|--|
| Consideration | Attentive to the comfort, well-being and contributions of subordinates. |
| Initiation of Structure | Clearly defining one's own role, and clearly defining and expressing expectations to subordinates. |
| Representation | Speaking and acting as a representative for the unit and/or organization. |
| Demand Reconciliation | Resolving and merging conflicting organizational demands; reducing disorder to the unit and/or organization. |
| Tolerance of Uncertainty | Tolerating uncertainty and postponement without major anxiety. |
| Persuasiveness | Using persuasions and arguments effectively; exhibiting convictions. |
| Tolerance of Freedom | Allowing subordinates to scope for initiative, decision and action. |
| Role Retention | Actively exercising leadership roles as opposed to surrendering them. |
| Predictive Accuracy | Exhibiting foresight and ability to predict outcomes accurately. |
| Production Emphasis | Applying pressure for productive output. |
| Integration | Maintaining a close-knit unit and/or organization; resolving conflicts between subordinates. |
| Influence with Superiors | Maintaining cordial relationships with upper management; able to influence upper management; striving for higher status for self and unit. |

Source: The descriptions for the Stogdill's leadership behaviors in Table 16 are based on the work of Stogdill (1974, p. 143).

Yukl's Taxonomy of Managerial Behaviours

Another body of knowledge related to managerial behaviours is found in a four-year research program conducted by Yukl and associates (Yukl & Nemeroff 1979; Yukl 1981). The first version of the typology for managerial behaviours by Yukl (1981) consisted of nineteen behavioural categories. Yukl (1981) promotes integrating frameworks through various approaches including factor analysis, judgmental analysis and theoretical deduction. Therefore, Yukl's taxonomy has evolved from the set of nineteen behavioural categories, to the latest one that has only twelve (Yukl, 2002).

The latest version of this taxonomy contains three higher-level concepts with specific behavioural items. The concepts and items are: ***task*** (*clarifying roles, monitoring operations and short-term planning*), ***relations*** (*consulting, supporting, recognizing and developing*) and ***change*** (*empowering, envisioning change, taking risks for change, encouraging innovative thinking and external monitoring*). Table 17 exhibits the summary of Yukl's taxonomy of managerial behaviours.

Apart from integrating frameworks, Yukl (2002) affirms that his taxonomy does not simply outline day-to-day managerial behaviours, but also identifies effective managerial or leadership behaviours. However, he adds that a few behaviours are more relevant than others, depending on the environment and circumstances.

Table 17: Summary of Yukl's Taxonomy of Managerial Behaviours

| | Behaviour | Description |
|------------------|---------------------------------|---|
| <i>Task</i> | Clarifying Roles | Assigning tasks and explaining job responsibilities, task objectives, and performance expectations. |
| | Monitoring Operations | Checking on the progress and quality of the work, and evaluating individual and unit performance. |
| | Short-term Planning | Determining how to use personnel and resources to accomplish a task efficiently, and determining how to schedule and coordinate unit activities efficiently. |
| <i>Relations</i> | Consulting | Checking with people before making decisions that affect them, encouraging participation in decision making, and using the ideas and suggestions of others. |
| | Supporting | Acting considerate, showing sympathy and support when someone is upset or anxious, and providing encouragement and support when there is a difficult, stressful task. |
| | Recognizing | Providing praise and recognition for effective performance, significant achievements, special contributions, and performance improvements. |
| | Developing | Providing coaching and advice, providing opportunities for skill development, and helping people learn how to improve their skills. |
| <i>Change</i> | Empowering | Allowing substantial responsibility and discretion in work activities, and trusting people to solve problems and make decisions without getting prior approval. |
| | Envisioning Change | Presenting and appealing description of desirable outcome that can be achieved by the unit, describing a proposed change with great enthusiasm and conviction. |
| | Taking Risks for Change | Taking personal risks and making personal sacrifices to encourage and promote desirable change in the organization. |
| | Encouraging Innovative Thinking | Challenging people to question their assumption about the work and consider better ways to do it. |
| | External Monitoring | Analyzing information about events, trends, and changes in the external environment to identify threats and opportunities for the organizational unit. |

Source: The descriptions in Yukl's taxonomy of managerial behaviors in Table 17 are based on the work of Yukl et al. (2002, pp. 25-28).

Luthans & Lockwood's Leader Observation System (LOS) Model

Luthans and Lockwood (1984) developed the Leader Observation System (LOS) to study what managers do in natural settings. This framework contains four higher-level abstractions of activities, each with a set of categories and behavioural descriptions. The activities, categories and behavioural descriptions are: ***routine communication*** (*exchanging information and handling paperwork*), ***traditional management*** (*planning, decision-making, and controlling*), ***networking*** (*interacting with outsiders and socializing/politicking*) and ***human resource management*** (*motivating/reinforcing, disciplining/punishing, managing conflict, staffing, and training/developing*). Table 18 displays the summary of Luthans and Lockwood's LOS model.

The LOS model is created from the ground-up in two major phases (Luthans & Lockwood, 1984). The first phase involved unstructured observations of 44 managers at all levels in various types of organizations. The managers were observed for a period of two weeks, and over 440 hours of unstructured observations were collected. The second phase involved a Delphi process of constructing comprehensive and workable categories to accommodate the 440 hours of freely observed behaviours. The Delphi panel consisted of four expert and three non-expert panellists.

One of the key contributions of the LOS model is that it uncovered the socializing or politicking aspect of managerial work. This particular element was not explicitly stated in earlier taxonomies such as those proposed by Mintzberg (1971; 1981), Stogdill (1974) and Yukl (1981). Additionally, due to the ground-up approach used to establish the model and the thorough behavioural descriptions accompanying it, the activities and categories are easier to operationalize in subsequent studies (Luthans et al. 1985).

Table 18: Summary of Luthans & Lockwood's LOS Model

| Type of Activity | Categories | Behavioural Descriptions |
|----------------------------------|----------------------------|---|
| Routine Communication | Exchanging Information | Answering routine procedural questions; receiving and disseminating requested information; conveying results of meetings; giving or receiving routine information over the phone; holding staff meetings of an informational nature (e.g., status updates, new company policies, etc.). |
| | Handling Paperwork | Processing mail; reading reports and in-box; writing reports, memos, letter, etc.; doing routine financial reporting and bookkeeping; doing general desk work. |
| Traditional Management | Planning | Setting goals and objectives; defining tasks needed to accomplish goals; scheduling employees, timetables; assigning tasks and providing routine instructions; coordinating activities of different subordinates to keep work running smoothly; organizing the work. |
| | Decision Making | Defining problems; choosing between alternatives or strategies; handling daily operational crises as they arise; weighing tradeoffs; making decisions; developing new procedures to increase efficiency. |
| | Controlling | Inspecting work; walking around; monitoring performance data (e.g., computer printouts, production, financial reports); practicing, preventive maintenance. |
| Networking | Interacting with Outsiders | Public relations; contacts with customers; contacts with suppliers and vendors; external meetings; community service activities. |
| | Socializing/ Politicking | Engaging in nonwork-related chitchat (e.g., family or personal matters); “joking around”; discussion rumours, hearsay, grapevine; complaining, griping, downgrading others; politicking; gamesmanship. |
| Human Resource Management | Motivating/ Reinforcing | Allocating formal organizational rewards; asking for input, participation; conveying appreciation, compliments; giving credit where due; listening to suggestions; giving position performance feedback; increasing job challenge; delegating responsibility/authority; letting subordinates determine how to do their own work; sticking up for the group to superior and others, backing a subordinate. |
| | Disciplining/ Punishing | Enforcing rules and policies; nonverbal glaring; demotion, hiring and firing; any formal organizational reprimand or notice; “chewing out” a subordinate, criticizing; giving negative performance feedback. |
| | Managing Conflict | Managing interpersonal conflict between subordinates or others; appealing to higher authority to resolve dispute; appealing to third-party negotiators; trying to get cooperation or consensus between conflicting parties; attempting to resolve conflicts between subordinate and self. |
| | Staffing | Developing job descriptions for position openings; reviewing applications; interviewing applications; hiring; contacting applicants to inform them of being hired or not; “filling in” where needed. |
| | Training/ Developing | Orienting employees, arranging for training seminars, etc.; clarifying roles, duties, job descriptions; coaching, mentoring, walking subordinates through task; helping subordinates with personal development problem. |

Source: The descriptions of Luthans & Lockwood’s LOS model in Table 18 are based on the work of Luthans et al. (1988, pp. 10-12).

Quinn's Competing Values Model (CVM) of Leadership Roles

Quinn (1984) conducted a review of the literature in the managerial and leadership domains, and summarized leadership behaviours into eight distinct roles (Table 6). He integrated the eight roles into from earlier work published by Quinn and Rohrbaugh (1983), which conceptualized a competing values model for organizational effectiveness. The roles are represented in a circular pattern based on two underlying dimensions. The first dimension is a continuum ranging from *stability* to *flexibility*. Meanwhile, the second dimension is a continuum ranging from *internal* versus *external* focus. This resulted into the framework known as Quinn's competing values model (CVM) of leadership roles.

The primary purpose of the model was to capture the complexities in leadership behaviours. These complexities are captured in two ways. First, leaders must have the broad set of skills to manage the conflicts that exist in their jobs. For example, leaders must balance between the inherently conflicting need for stability versus flexibility. Second, Quinn argued that leaders do not simply juggle from one role to another. For example, at a specific point in time, leaders do not take on the role of monitor, or director, or innovator. Instead, they must perform all these roles simultaneously (Quinn 1991).

Yukl's Taxonomy of Managerial Behaviours

Another body of knowledge related to managerial behaviours is found in a four-year research program conducted by Yukl and associates (Yukl & Nemeroff 1979; Yukl 1981). The first version of the typology for managerial behaviours by Yukl (1981) consisted of nineteen behavioural categories. Yukl (1981) promotes integrating frameworks through various approaches including factor analysis, judgmental analysis and theoretical deduction. Therefore, Yukl's taxonomy has evolved from the set of nineteen behavioural categories, to the latest one that has only twelve (Yukl, 2002).

The latest version of this taxonomy contains three higher-level concepts with specific behavioural items. The concepts and items are: ***task*** (*clarifying roles, monitoring operations and short-term planning*), ***relations*** (*consulting, supporting, recognizing and developing*) and ***change*** (*empowering, envisioning change, taking risks for change, encouraging innovative thinking and external monitoring*). Table 17 exhibits the summary of Yukl's taxonomy of managerial behaviours.

Apart from integrating frameworks, Yukl (2002) affirms that his taxonomy does not simply outline day-to-day managerial behaviours, but also identifies effective managerial or leadership behaviours. However, he adds that a few behaviours are more relevant than others, depending on the environment and circumstances.

Leadership Behaviours in Information Systems Literature

Although the focus of this project is on managerial or leadership behaviours in the context of IT outsourcing, it is useful to extend the review beyond the scope of outsourcing. As such, this section contains a review of the five models for managerial or leadership behaviours and their applications throughout IS literature.

The IS literature in general is littered with references to these five models (especially that of Mintzberg's). Nonetheless, only studies that incorporated at least one of the models directly into their research frameworks are included. As a result, only a handful of studies are presented in this section.

The models discussed earlier have been used in IS literature for the following streams of research:

- ***The CIO job position***

The first stream of research focuses toward increasing our understanding of the CIO job position. Stephens et al. (1992) conducted the first of such studies and compared the managerial roles performed by CIOs to those of the mid-level IS managers. He adopted both the coding scheme for managerial activities as well as the unstructured observation method for data collection proposed by Mintzberg (1973). The study found that there are indeed differences in the managerial roles carried out by the CIOs compared to those of the mid-level IS managers. In addition, the importance of the liaison role in bridging the gap between a CIO and his peers was established.

Grover et al. (1993) also conducted a similar study to examine CIOs and their roles by using Mintzberg's framework. This study was conducted using the survey questionnaire approach and has a higher level of generalizability compared to its predecessor.

Nonetheless, the most significant contribution of this particular work is the operationalization of six out of the ten managerial roles from Mintzberg to specifically address CIOs.

Lastly, we have a study by Smaltz et al. (2006) that examined the relationship between CIO capabilities and CIO-TMT (top management team) engagements to CIO role effectiveness. Smaltz and his associates sampled a total of 185 CIOs from the healthcare industry. Their study is rather different relative to other studies since it is not merely prescriptive (i.e., describing CIOs' daily activities). Instead, their study successfully identified CIO capabilities as the mediating factor in the relationship between CIO/TMT engagements and CIO role effectiveness.

Interesting to note in this stream of research is that all of the authors adopted the managerial framework presented by Mintzberg.

- ***The effect of IT on managerial behaviours***

Another body of work studies the effect of IT on managerial behaviours. Vlahos and Ferratt (1995) looked at the effect of computer-based information systems (CBIS) usage to decisional roles. The study included managers from medium to large organizations in Greece. CBIS usage was found to significantly influence only one decisional role, the resource allocator.

Meanwhile, Pinsonneault and Rivard (1998) inspected the relationship between the levels of IT usage and informational roles. Contrary to the initial hypothesis, the study discovered that there is a positive relationship between levels of IT usage and time spent on informational roles. Upon further scrutiny, the firm's environment in promoting IT usage

(reorientation versus convergence) as well as the phase during reorientation were found to be significant moderators for the previous relationship.

As in the studies within the CIO job position stream, the studies within the effect of IT on managerial behaviours also applied the managerial framework presented by Mintzberg.

- ***Leadership in development teams***

In the third research stream, we see studies looking at leadership in IS and software development teams. Altogether, there are three studies classified under this specific stream. These studies include Ferratt et al. (1993), Kayworth and Leidner (2001) and Faraj and Sambamurthy (2006).

Ferratt et al.'s (1993) article relates to developing an instrument to measure IS supervisor's behaviours and the team members' productivity level. The measurements for behaviours were adopted from Stogdill's framework. They tested their instrument on different groups of supervisees including groups of MBA students, clerical workers and technical workers. Significant refinements were made after each test to improve the reliability and validity of the measurements.

A study by Kayworth and Leidner (2001) combined together concepts from Quinn's taxonomy and Yukl's taxonomy. Specifically, they incorporated the leadership roles espoused by Quinn, and the *consideration* and *initiation of structure* concepts brought forth by Yukl. All of the managerial or leadership behaviours are found to positively influence leadership effectiveness.

Faraj and Sambamurthy (2006) on the other hand were interested in the concept of empowerment found in Yukl's taxonomy, and how empowerment influences overall team

performance. The results show that empowerment alone does not influence team performance. However, empowerment is an important factor for highly experienced teams and teams facing unclear tasks.

We see that unlike previous streams, the studies categorized under leadership in development teams are more diverse in their choice of managerial or leadership models. Apart from this diversity, we also note that in the two latter studies the authors extrapolated specific managerial behaviours from the relevant taxonomy and used them as the variables to predict effectiveness. In short, managerial behaviours are used to form independent as opposed to dependent variables.

- ***Comparing managerial activities between different groups of IS personnel***

The last body of work included a series of studies by the Gottschalk and Karlsen team (2002; 2005; 2006). Together they compared the relevance of the Mintzberg's managerial roles between different groups of IS personnel such as between internal IT and outsourcing project managers. Throughout their work, they adopted the instrument created by Grover et al. (1993) to measure the relevance of roles among the IS personnel.

Roy et al. (2006) presented an exploratory study of internal IT project directors (or project leaders) by using the case study approach. The authors compared the relevance of leadership roles in high versus low transformational projects. Their studies are starkly different compared to the work of Gottschalk and Karlsen since they were inspired by the Quinn's CVM of leadership roles. Their initial findings are surprising since contrary to the general belief, IT project directors exert high transactional roles in both the high and low transformational projects. Nevertheless, they made one observation that has never been

made in any previous study, which is that IT project directors more often than not delegate their roles to others.

Table 19: Summary of Managerial Roles and Behaviours in IS Literature

| Literature | Design | Relevant Variables ⁴⁹ | Relevant Managerial Model | Descriptions and Results |
|------------------------|--|---|---------------------------|---|
| Stephens et al. (1992) | Case study of five CIOs in various types of organizations. | None. | Mintzberg (1973) | <ul style="list-style-type: none"> ▪ The number, duration, and location of CIO activities show that the CIO role is different compared to the role of mid-level MIS manager. ▪ CIOs need to play the liaison role in order to bridge the gap with peers. |
| Ferratt et al. (1993) | Instrument development. | IV: Work climate; work behaviour. DV: Employee productivity. | Stogdill (1974) | <ul style="list-style-type: none"> ▪ Instrument to measure Information Systems supervisor's work-unit environment and demonstrated supervising skills. ▪ Behavioural items adopted from Stogdill (1974): consideration, initiation of structure, and production emphasis. |
| Grover et al. (1993) | Survey questionnaire of 71 CIOs and 40 IS middle managers. | None. | Mintzberg (1980) | <ul style="list-style-type: none"> ▪ Adopted six of the Mintzberg's managerial roles to the CIO position. ▪ The managerial roles that are important for CIOs are significantly different from those in the manufacturing and sales departments, but is not significantly different from the finance officers. ▪ CIOs place more importance on the spokesman role, while IS middle managers place more weight on the leader and resource allocator roles. ▪ As IS management matures, the spokesman and liaison roles become more important for the CIO. ▪ The more centralized the IS resource, the greater the CIO's role in acting as a spokesman, monitor and resource allocator. |

⁴⁹ IV = Independent variable; DV = Dependent variable.

| Literature | Research Method/Type | Research Model | Managerial Framework Used | Results/Descriptions |
|------------------------------|--|---|---------------------------|---|
| Vlahos & Ferratt (1995) | Survey questionnaire of 55 managers in middle-to-large organizations. | IV: IT usage, types of IT components, and satisfaction with computer-based information systems (CBIS). DV: Importance to managerial roles, importance of various types of CBIS, planned changes to CBIS. | Mintzberg (1973) | <ul style="list-style-type: none"> ▪ CBIS is valued highest in supporting the resource allocator role. |
| Pinsonneault & Rivard (1998) | Semi-structured interviews with 59 middle managers in 3 large companies. 2-day activity log for IT usage (self-report). | IV: level of IT usage DV: time spent on managerial activities based on Mintzberg's classification. Moderator: Context of IT usage in firms (reorientation versus convergence), type of reorientation the firm has undertaken. | Mintzberg (1973) | <ul style="list-style-type: none"> ▪ Contrary to initial hypothesis, as the level of IT usage increases, the time spent on informational activities also increases. ▪ There is a significant positive relationship between level of IT usage and time spent on managerial activities in the reorientation context. ▪ The pattern of the relationship between IT usage and the nature of managerial work depends on the kind of reorientation in which the firm has embarked. |

| Literature | Research Method/Type | Research Model | Managerial Framework Used | Results/Descriptions |
|-----------------------------|---|--|--|---|
| Kayworth & Leidner (2001) | Survey questionnaire (both quantitative and qualitative data) of 13 culturally diverse global teams. | IV: Leader roles (behavioural complexity), perceived role clarity, communication effectiveness, communication satisfaction, extent of IT usage. DV: Leader effectiveness. | <ul style="list-style-type: none"> ▪ Denison et al.'s (1995) measurements for leadership roles in Quinn's CVM of leadership behaviours. ▪ LOQ (earlier version of Stogdill's framework). | <ul style="list-style-type: none"> ▪ Examined leadership effectiveness from 3 perspectives – behavioural, contingency and behavioural complexity. ▪ Behavioural perspective supported – more effective leaders show consideration to team members and initiate structure. ▪ Contingency perspective not supported – no variation between virtual and traditional team (result from previous research), and no variation based on extent of IT usage. ▪ Behavioural complexity supported – effective leaders need to balance different requirements (perform mentoring and director roles simultaneously). |
| Karlsen et al. (2002) | Survey questionnaire of 128 highest-ranked IT professional in organizations and 80 IT project managers. | IV: IT executives versus IT project managers. DV: Managerial roles. | Grover et al.'s (1993) adoption of Mintzberg's managerial roles for CIOs. | <ul style="list-style-type: none"> ▪ IT executives are significantly more externally oriented (i.e., emphasize the monitor role). ▪ IT project managers are significantly more internally oriented (i.e., emphasize the leader and resource allocator roles). |
| Gottschalk & Karlsen (2005) | Survey questionnaire of 80 internal project managers and 84 outsourcing project managers. | IV: Project managers involved in internal projects versus those involved in outsourcing projects. DV: Managerial roles. | Grover et al.'s (1993) adoption of Mintzberg's managerial roles for CIOs. | <ul style="list-style-type: none"> ▪ Project managers for internal IT projects emphasize the leader and resource allocator roles significantly more than project managers for outsourcing projects. ▪ No significant difference found for other managerial roles between the two groups of project managers. |

| Literature | Research Method/Type | Research Model | Managerial Framework Used | Results/Descriptions |
|-----------------------------|--|---|---|--|
| Karlsen & Gottschalk (2006) | Survey questionnaire of 21 vendor experts. | IV: Client versus vendor project managers, type of IT outsourcing projects. DV: Managerial roles. | Grover et al.'s (1993) adoption of Mintzberg's managerial roles for CIOs. | <ul style="list-style-type: none"> ▪ External project manager roles (liaison and monitor) are significantly more important in termination projects compared to outsourcing projects. ▪ Internal project manager roles (leader and resource allocator) are significantly more important in outsourcing projects compared to termination projects. |
| Faraj & Sambamurthy (2006) | Survey questionnaire from 69 software development teams. | IV: Directive versus empowering leadership. DV: Team performance. Moderators: Team experience; team uncertainty. | Yukl (2002) | <ul style="list-style-type: none"> ▪ The concept of "empowering leadership" was taken from Yukl's taxonomy of managerial behaviours. ▪ Confirming previous research → Empowerment does not directly influence team performance. ▪ Empowerment has significant positive influence on team performance in a highly experienced (skilled) team and for tasks with high uncertainty (not well-defined). |
| Roy et al. (2006) | Case study of 6 IT project directors – 2 working in low transformational projects and 4 working in high transformational projects. | IV: High transformational versus low transformational project. DV: Distribution of Quinn's leadership roles in IT project directors within the two types of project. | Quinn (1991) | <ul style="list-style-type: none"> ▪ Transactional roles (monitor, coordinator, director and producer) are highly exerted in both high and low transformational projects. ▪ Broker and innovator roles are highly exerted in the high transformational project. ▪ Observation: IT project directors perform all roles but also delegate the managerial roles to assistants. |

| Literature | Research Method/Type | Research Model | Managerial Framework Used | Results/Descriptions |
|----------------------|--|---|---------------------------|--|
| Smaltz et al. (2006) | Survey questionnaire of 185 CIOs in the healthcare industry. | IV: CIO capability, top management team and CIO (TMT/CIO) engagements. DV: CIO role effectiveness. | Mintzberg (1971, 1980). | <ul style="list-style-type: none"> ▪ CIO capability mediates the relationship between TMT/CIO engagements and CIO role effectiveness. ▪ CIO's TMT membership and extent of trust between CIO and TMT are significant indicators of CIO role effectiveness. ▪ CIO capability is significantly important in determining the CIO role effectiveness. |

Appendix C: Screening Protocol

This is the proposed protocol for screening potential cases. The questions are *customized for the client firms* (i.e., client project managers and/or client-side team members). To obtain a more accurate assessment of ISO project outcomes, we recommend to have the vendor project managers to respond to the questions related to ISO project outcomes (successful vs. unsuccessful).

Questions on Project Background

1. Your organization can be classified into the following sector: (Government, Services, Oil & gas, Manufacturing, Retailing, Wholesale, Education)
2. What is the estimated total cost of this project?
3. What is the duration of this project?
4. When is this project expected to be completed?
5. If still on going, what phase is the project currently in? (Planning, requirements gathering, design, implementation, testing, support)
6. How would you classify the project? (Data processing, Systems integration, Systems design/planning, Data center, Application development, Telecommunications/networking)
7. If systems integration, systems design/planning, or application development, can you specify the type of system/application? (HR, Finance, ERP, Supply chain, etc.)
8. How many people from your organization are involved in this project?
9. How many people from the vendor organization are involved in this project?

Questions on ISO Project Outcome (Successful vs. unsuccessful)

| | | | | |
|-------------------|----------|---------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |

Please rate each statement on a scale of 1 to 5 (explain the scale).

I believe that the project

1. ... was completed as scheduled.
2. ... was within budget.
3. ... met my firm's expectations.
4. ... met my firm's needs.
5. ... outcome or product delivered quality services to the users.
6. ... outcome or product delivered quality information to the users.
7. ... increased the vendor's reputation.
8. ... increased the vendor's chances to gain repeat businesses with my firm.

Questions on Strategic Impact

| | | | | |
|-------------------|----------|---------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |

Please rate each statement on a scale of 1 to 5 (explain the scale).

To what extent do you agree that the following statements reflect the outsourced project?

1. Requires a close partnership between my firm and the vendor firm.
2. Provides opportunity for work process improvements for my firm.
3. Opens up new revenue opportunities for my firm.
4. Provides my firm with short-term competitive advantage.
5. Provides my firm with long-term competitive advantage.

Questions on Extent of Substitution

| | | | | |
|-------------------|----------|---------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |

Please rate each statement on a scale of 1 to 5 (explain the scale).

To what extent do you agree that the following statements reflect your (vendor's) future responsibilities toward the outsourced project?

1. The vendor firm continues to be involved in the day-to-day operations of the application or system.
2. The vendor ownership of hardware, physical infrastructure, or software licensing related to the application or system.
3. The vendor's involvement is restricted to off-site support only.
4. The vendor continues to influence upgrade or enhancement decisions related to the application or system (e.g., change of database, OS, application server).
5. The vendor continues to be involved in the planning, design, and implementation of other application or system in my firm.

Appendix D: Sample Interview Protocol for Client Project Managers⁵⁰

General instructions:

This document contains the interview guides for the client project manager. The questions will be personalized to reflect the interviewee's IT project, company, and people. For example, the phrase "<<this project>>" will be changed to the "actual project nickname" whenever possible.

Introduction Script:

Thank you for agreeing to participate. The purpose of this interview is to gather information related to my research work. I am currently examining skills and knowledge in Information Systems outsourcing project managers.

I will take the necessary precautions to maintain the confidentiality of this project such as removing the names, and other personal identifiers. However, I will need to record our interview today. Only myself and my two other co-researchers will have access to this recording. Do I have your permission to record this interview? Thank you.

The general format of this interview is: First, I need some information about your work. Second, I will ask you about your skills and knowledge. And finally, we will talk about the project itself.

Do you have any questions before we begin this interview?

Project Manager's Background Information

1. Please tell me briefly about your job history with <<this company>>. I need to know your previous position, department and estimated duration in position.
2. Please tell me about your work experience before joining <<this company>>. I need to know your previous position, industry/sector, and estimated duration in position.
3. Did you ever participate in an IT related project before? This includes participation in a non-project management role.

For those with previous experiences: Can you briefly describe the type of project, role, and duration of your involvement?

For those with previous experience: Have you worked with <<the vendor company>> previously? The same vendor project manager?

⁵⁰ An interview protocol for the vendor project managers was also prepared. The questions are similar, and differences occur due to wording adjustments (e.g., "your company" as opposed to "the vendor").

4. Do you currently hold any formal industry certifications such as PMP or lead assessor for ISO?
5. Have you attended trainings in project management or IT outside of the formal academic setting?

For yes answer: Can you give a brief description to each one of them including the topic, when it was held, and estimated duration?

6. Within the past 2 years, have you attended training sessions that you think enable you to better understand <<this company>>? For example, internal courses, workshop, etc.

For yes answer: Can you give a brief description to each one of them including the topic addressed, when it was held, and duration?

7. Within the past 2 years, have you attended training sessions that you think enable you to better understand <<the function>>? For example, courses, workshop, etc.

For yes answer: Can you give a brief description to each one of them including the topic addressed, when it was held, and duration?

Project Manager's Tasks & Competencies

The following questions refer to <<project name>>.

8. What were your responsibilities as the project manager for <<this project>>? Did you handle these responsibilities throughout the project lifecycle? Specific stages only? Which stage?
9. Please describe your tasks as the project manager for <<this project>>. Maybe you can go through the different stages in the project starting from your initial involvement until the end.
Stages: Project proposal/tender, contract negotiation, planning, analysis, design, implementation, testing and support/maintenance/warranty.
10. On a scale of 1 to 10, with 10 being the most important, how important was it for you to monitor the progress of this project? What makes you select <<this rating>>? (Ask for justifications such as observations, specific incidences, etc.)
11. Did you have specific methods to monitor the progress of this project such as weekly reviews, meetings, checkpoints, or tools? Please describe.

12. Did you have specific methods to benchmark the outcome of this project such as comparing it with other projects, auditing process, or particular standards that you follow? Please describe.
13. We generally define business competence⁵¹ as a set of knowledge that enables you to:
- *Understand your company's culture, work processes and procedures,*
 - *Understand the impacts of this IT project to your division and organization,*
 - *Communicate with people at different levels, and from different companies, and*
 - *Work in a team environment.*

Based on this definition, on a scale of 1 to 10, with 10 being the most competent, what would be your rating for your overall business competence during <<the first quarter>> of this project? What makes you select <<this rating>>?
(Request for examples such as observations, specific incidences, etc.)

14. On the same scale, what would be your rating for the vendor project manager's overall business competence during <<the first quarter>> of this project? What makes you select <<this rating>>?

15. We generally define IT competence⁵² as a set of knowledge that enables you to:

- *Understand the general usage of IT related technology,*
- *Manage systems or application development projects, and*
- *Access relevant technical information pertaining to this project.*

Based on this definition, on a scale of 1 to 10, with 10 being the most competent, what would be your rating for your overall IT competence during <<the first quarter>> of this project? What makes you select <<this rating>>?

16. On the same scale, what would be your rating for the vendor project manager's overall IT competence during <<the first quarter>> of this project? What makes you select <<this rating>>?

Linking Items⁵³

17. Why did <<your company (or department)>> decide to outsource this project?

<<Re-cap assessment of outcome from previous conversation/screening>>

18. *What were the factors or events that influenced this outcome?*

⁵¹ Informants will be given a printed copy of the business competence definition to read.

⁵² Informants will be given a printed copy of the IT competence definition to read.

⁵³ Questions 22 until 30 in this category are adapted from Reich (1992).

(What happened? How was it handled? When? People involved? Effects?)

19. When I look at <<the documents>>, I see a few major issues that occurred for this project. I hope you'll be able to answer my questions relating to these issues: <<this question must be customized for each case site>>

- (i). **Requirements** – additional/changing requirements by users, and customization issues – Can you identify factors such that this issue can be better handled?
- (ii). **Technical** – late delivery of hardware, database error, acceptable downtime, data issues – Can you identify factors such that this issue can be better handled?
- (iii). **Users** – coordinating dates for CRP and training, getting sign-off from key users, user expectation (i.e., document management system) – Can you identify factors such that this issue can be better handled?
- (iv). **Post-implementation** – additional man-days for post-implementation support – Can you identify factors such that this issue can be better handled?

20. Do you feel that for this project, <<your company>> had an open communication channel with <<the vendor company>>? For example, project members from your side are able to talk to project members from the vendor side.

If yes, on a scale of 1 to 10, with 10 being the most open communication channel, what would be your rating? Why do you choose <<this rating>>?

If no, why do you say “no”?

21. Do you feel that for this project, you had an open communication channel with <<the vendor>>? For example, you were able to contact people from <<the vendor>> easily.

If yes, on a scale of 1 to 10, with 10 being the most open communication channel, what would be your rating? Why do you choose <<this rating>>?

If no, why do you say “no”?

What about specific members from <<the vendor company>>?
(*Management, project manager, IT people → various stakeholders*)

22. How often did you talk on the phone with a person from <<the vendor company>>?

Who did you talk to?

What did you usually discuss?

What was the typical duration of these phone conversations?

23. What were the kinds of written communication that passes between you and the vendor organization? Elaborate on the frequency, source and content.

Examples: Minutes of meetings, project reports/updates, memos, emails, personal notes and other.

24. Were there other forms of interactions between you and the vendor company not included in my previous questions? For example, social outings, gatherings, etc.? Elaborate on the situation, frequency, and discussion topics.
25. For this project, whom did you go to in order to get information related to the project? *(From your own company, and the client/vendor company)*
What kind of information did you get from them?
26. What were the positive aspects of communication with <<the vendor>>? What were the negative aspects of communication with <<the vendor>>?
27. For this project, how would you describe your company's overall relationship with the vendor company?

On a scale of 1 to 10, with 10 being the most satisfactory, what would be your rating?

Why do you choose <<this rating>>?

28. For this project, how would you describe your overall relationship with <<the vendor company>>?

On a scale of 1 to 10, with 10 being the most satisfactory, what would be your rating?

Why do you choose <<this rating>>?

What about specific members from <<the client company>>?
(Management, project manager, IT people → various stakeholders)

29. Do you have, or do expect to have, any responsibilities associated with the newly developed system after its completion? If so, please describe.
30. Do you expect the vendor project manager to have any responsibilities associated with the newly developed system after its completion? If so, please describe.

Concluding Question

31. Is there something specific that you would like me to know about this project? What would you like to add?

Thank you.

Appendix E: Sample Questionnaire for Client Project Managers⁵⁴

General Background: The primary objective of this study is to determine the relevant areas of competencies for project managers who are involved in Information Systems outsourcing activities. I would first like to thank you for your gracious participation. In addition, I would like to ensure you that I will take the appropriate precautions to maintain the *confidentiality* of all your responses.

Instructions: Please answer all of the questions to the best of your ability. Thank you again for your cooperation.

Using the scale given, please assess *your own business competence*. Please respond to all parts of the survey as honestly as possible.

| 1 | 2 | 3 | 4 | 5 |
|-----------|------|---------|------|-----------|
| Very Poor | Poor | Average | Good | Excellent |

| Organizational Overview Questions | Ratings |
|---|---------|
| Rate your level of knowledge of your firm's external environment (e.g., government, competitors, suppliers, and customers). | |
| Rate your level of knowledge of the goals and objectives of your firm as a whole. | |
| Rate your level of knowledge of the core capabilities of your firm. | |
| Rate your level of knowledge of the key factors that must go right for your firm to succeed. | |

| 1 | 2 | 3 | 4 | 5 |
|-----------|------|---------|------|-----------|
| Very Poor | Poor | Average | Good | Excellent |

| Organizational Unit Questions | Ratings |
|--|---------|
| Rate your level of knowledge of the main challenges faced by division(s) in your firm that <i>is/are</i> involved in the project. | |
| Rate your level of knowledge of the language (e.g., key concepts, jargons, etc.) used by the division(s) in your firm that <i>is/are</i> involved in the project. | |
| How well do you understand the work processes of the division(s) in your firm that <i>is/are</i> involved in the project? | |
| Rate your level of knowledge of the connections and interdependencies between the division(s) in your firm that <u>is/are involved</u> in the project with the division(s) that <u>is/are not involved</u> . | |

⁵⁴ A questionnaire for the vendor project managers was also prepared. The questions are similar, and differences occur due to wording adjustments (e.g., "your company" as opposed to "the vendor").

| Project Responsibility Questions | Ratings |
|---|----------------|
| How well do you understand the impact of the outcome of the project to the users? | |
| How well do you understand the impact of the outcome of the project to your firm's upper management? | |
| How well do you understand the impact of the outcome of the project to your firm's competitive advantage? | |
| How well do you understand the impact of the outcome of the project to the future relationship between your firm and the vendor firm? | |
| How well do you understand the impact of the outcome of the project to the vendor firm? | |

| IT-Business Integration Questions | Ratings |
|--|----------------|
| How well do you think you are able to recognize potential ways in which your firm can exploit new business opportunities using IT? | |
| How well do you think you are able to analyze your firm's business problems in order to identify IT-based solutions? | |
| How well do you think you are able to evaluate the impacts of IT solutions to your firm? | |

| 1 | 2 | 3 | 4 | 5 |
|---------------------------------|------------------------------------|-------------------------------|------------------|--------------------------------|
| Not Confident At All | Only Slightly Confident | Somewhat Confident | Confident | Extremely Confident |

| Business Knowledge Networking Questions | Ratings |
|---|----------------|
| If you have a business question or problem related to this project that you could not solve alone, how confident are you about finding the right person from your own firm to consult with? | |
| If you have a business question or problem related to this project that you could not solve alone, how confident are you about finding the right person from the vendor firm to consult with? | |
| If you have a business question or problem related to this project that you could not solve alone, how confident are you about finding the right person from outside your own firm or vendor firm (e.g., consultants, other vendors) to consult with? | |
| If you have a business question or problem related to this project that you could not solve alone, how confident are you about finding other relevant sources of business information including Internet sites, magazines, trade journals, and conferences? | |

| | | | | |
|--------------------|--------------------------------|---------------------------|------------------|----------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Ineffective | Only Slightly Effective | Somewhat Effective | Effective | Extremely Effective |

| Interpersonal Communications Questions | Ratings |
|--|----------------|
| In general, how effective do you think you are at communicating with people at different levels within your own firm (e.g., with your subordinates, peers, superiors)? | |
| In general, how effective do you think you are at communicating with people at different levels within the vendor firm? | |
| How effective are you at working in a team environment? | |
| How well can you communicate about business matters to IT specialists? | |

Using the scale given, please assess *your own IT competence*. Please respond to all parts of the survey as honestly as possible.

| | | | | |
|---------------------------------|------------------------------------|-------------------------------|----------------------|--------------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Not Knowledgeable At All | Only Slightly Knowledgeable | Somewhat Knowledgeable | Knowledgeable | Extremely Knowledgeable |

| Knowledge of Technology Questions | Ratings |
|--|----------------|
| What is your general knowledge of client-server? | |
| What is your general knowledge of networking? | |
| What is your general knowledge of multimedia? | |
| What is your general knowledge of database? | |
| What is your general knowledge of IT security? | |

| Knowledge of System Development Questions | Ratings |
|---|----------------|
| What is your general knowledge of traditional system development life cycle (SDLC)? | |
| What is your general knowledge of emerging system development life cycle such as RAD and extreme programming? | |
| What is your general knowledge of prototyping? | |
| What is your general knowledge of Information Systems outsourcing? | |
| What is your general knowledge of Information Systems project management practices? | |

| | | | | |
|---------------------------------|------------------------------------|-------------------------------|------------------|--------------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Not Confident At All | Only Slightly Confident | Somewhat Confident | Confident | Extremely Confident |

| Access to IT Knowledge Questions | Ratings |
|---|----------------|
| If you have an IT question or problem related to this project that you cannot solve alone, how confident are you about finding the right person from your own firm to consult with? | |
| If you have an IT question or problem related to this project that you cannot solve alone, how confident are you about finding the right person from the vendor firm to consult with? | |
| If you have an IT question or problem related to this project that you cannot solve alone, how confident are you about finding the right person from outside your own firm or vendor firm (e.g., consultants, other vendors) to consult with? | |
| If you have an IT question or problem related to this project that you cannot solve alone, how confident are you about finding other relevant sources of business information including Internet sites, magazines, trade journals, and conferences? | |

| | | | | |
|--------------|---------------|---------------------|-------------------|----------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Seldom | Occasionally | Frequently | Very Frequently |

| IT Project Participation Questions | Ratings |
|--|----------------|
| How often have you participated in initiating new Information Systems projects? | |
| How often have you participated in identifying the cost and benefits of Information Systems projects before they are developed; preparation of business cases? | |
| How often have you participated in managing Information Systems projects? | |
| How often have you participated in developing Information Systems? | |

| IT Project Management Questions | Ratings |
|---|----------------|
| How often have you led in initiating new Information Systems projects? | |
| How often have you led in identifying the cost and benefits of Information Systems projects before they are developed; preparation of business cases? | |
| How often have you led in managing Information Systems projects? | |
| How often have you led in developing Information Systems? | |

| IT Management Participation Questions | Ratings |
|---|----------------|
| How often have you participated in creating an IT vision statement regarding how IT contributes to business value and strategy? | |
| How often have you participated in developing IT strategy? | |
| How often have you participated in creating IT policies? | |
| How often have you participated in setting IT budgets? | |

| IT Management Leadership Questions | Ratings |
|--|----------------|
| How often have you led in creating an IT vision statement regarding how IT contributes to business value and strategy? | |
| How often have you led in developing IT strategy? | |
| How often have you led in creating IT policies? | |
| How often have you led in setting IT budgets? | |

| 1 | 2 | 3 | 4 | 5 |
|---------------------------------|------------------------------------|-------------------------------|----------------------|--------------------------------|
| Not Knowledgeable At All | Only Slightly Knowledgeable | Somewhat Knowledgeable | Knowledgeable | Extremely Knowledgeable |
| Almost Never | Seldom | Occasionally | Frequently | Very Frequently |

| Knowledge of IT Standards Questions | Ratings |
|--|----------------|
| What is your general knowledge of organizational related IT standards such as CMMI, ISO or COBIT? | |
| How often have you participated in development projects that follow a particular IT standard guidelines? | |
| How often have you participated in projects to implement a particular IT standard guidelines to existing systems? | |
| How often have you participated in projects to audit an organization or division based on a particular IT standard guidelines? | |
| How often have you led in development projects that follow a particular IT standard guidelines? | |
| How often have you led in projects to implement a particular IT standard guidelines to existing systems? | |
| How often have you led in projects to audit an organization or division based on a particular IT standard guidelines? | |

Using the scale given, please assess *the business competence of the project manager from the vendor firm*. Please respond to all parts of the survey as honestly as possible.

| | | | | |
|------------------|-------------|----------------|-------------|------------------|
| 1 | 2 | 3 | 4 | 5 |
| Very Poor | Poor | Average | Good | Excellent |

| Organizational Overview Questions | Ratings |
|---|----------------|
| Rate the vendor project manager's level of knowledge of your firm's external environment (e.g., government, competitors, suppliers, and customers). | |
| Rate the vendor project manager's level of knowledge of the goals and objectives of your firm. | |
| Rate the vendor project manager's level of knowledge of the core capabilities of your firm. | |
| Rate the vendor project manager's level of knowledge of the key factors that must go right for your firm to succeed. | |

| Organizational Unit Questions | Ratings |
|--|----------------|
| Rate the vendor project manager's level of knowledge of the main challenges faced by the division(s) in your firm that is/are involved in the project. | |
| Rate the vendor project manager's level of knowledge of the language (e.g., key concepts, jargons, etc.) used by the division(s) in your firm that is/are involved in the project. | |
| How well does the vendor project manager understand the work processes of the division(s) in your firm that is/are involved in the project? | |
| Rate the vendor project manager's level of knowledge of the connections and interdependencies between the division(s) in your firm that <u>is/are involved</u> in the project with the division(s) that <u>is/are not involved</u> . | |

| Project Responsibility Questions | Ratings |
|--|----------------|
| How well do you think the vendor project manager understands the impact of the outcome of the project to the users? | |
| How well do you think the vendor project manager understands the impact of the outcome of the project to your firm's upper management? | |
| How well do you think the vendor project manager understands the impact of the outcome of the project to your firm's competitive advantage? | |
| How well do you think the vendor project manager understands the impact of the outcome of the project to the future relationship between his/her firm and your own firm? | |
| How well do you think the vendor project manager understands the impact of the outcome of the project to his/her own firm? | |

| IT-Business Integration Questions | Ratings |
|--|----------------|
| How well do you think the vendor project manager is able to recognize potential ways in which your firm can exploit new business opportunities using IT? | |
| How well do you think the vendor project manager is able to analyze your firm's business problems in order to identify IT-based solutions? | |
| How well do you think the vendor project manager is able to evaluate the impacts of IT solutions to your firm? | |

| 1 | 2 | 3 | 4 | 5 |
|-----------------------------|--------------------------------|---------------------------|------------------|----------------------------|
| Not Confident At All | Only Slightly Confident | Somewhat Confident | Confident | Extremely Confident |

| Business Knowledge Networking Questions | Ratings |
|--|----------------|
| When faced with a business question or problem related to this project that cannot be solved alone, how confident are that the vendor project manager is able to find the right person from your firm to consult with? | |
| When faced with a business question or problem related to this project that cannot be solved alone, how confident are that the vendor project manager is able to find the right person from his/her own firm to consult with? | |
| When faced with a business question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find the right person from outside of your firm or his/her own firm (e.g., consultants, other vendors) to consult with? | |
| When faced with a business question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find other relevant sources of business information including Internet sites, magazines, trade journals, and conferences? | |

| 1 | 2 | 3 | 4 | 5 |
|--------------------|--------------------------------|---------------------------|------------------|----------------------------|
| Ineffective | Only Slightly Effective | Somewhat Effective | Effective | Extremely Effective |

| Interpersonal Communications Questions | Ratings |
|---|----------------|
| In general, how effective do you think the vendor project manager is at communicating with people at different levels within his/her own firm (e.g., with your subordinates, peers, superiors)? | |
| In general, how effective do you think the vendor project manager is at communicating with people at different levels from your firm? | |
| How effective is the vendor project manager at working in a team environment? | |
| How well do you think the vendor project manager communicates about IT matters in non-technical language and within a business context to non-IT specialists? | |

Using the scale given, please assess *the IT competence of the project manager from the vendor firm*. Please respond to all parts of the survey as honestly as possible.

| | | | | |
|---|--|-----------------------------------|----------------------|------------------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Not Knowledgeable At All | Only Slightly Knowledgeable | Somewhat Knowledgeable | Knowledgeable | Extremely Knowledgeable |

| Knowledge of Technology Questions | Ratings |
|--|----------------|
| What do you think is the vendor project manager's level of knowledge in client-server? | |
| What do you think is the vendor project manager's level of knowledge in networking? | |
| What do you think is the vendor project manager's level of knowledge in multimedia? | |
| What do you think is the vendor project manager's level of knowledge in database? | |
| What do you think is the vendor project manager's level of knowledge in IT security? | |

| Knowledge of System Development Questions | Ratings |
|--|----------------|
| What do you think is the vendor project manager's general knowledge of traditional system development life cycle (SDLC)? | |
| What do you think is the vendor project manager's general knowledge of emerging system development life cycle such as RAD and extreme programming? | |
| What do you think is the vendor project manager's general knowledge of prototyping? | |
| What do you think is the vendor project manager's general knowledge of Information Systems outsourcing? | |
| What do you think is the vendor project manager's general knowledge of Information Systems project management practices? | |

| | | | | |
|---------------------------------|------------------------------------|-------------------------------|------------------|--------------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Not Confident At All | Only Slightly Confident | Somewhat Confident | Confident | Extremely Confident |

| Access to IT Knowledge Questions | Ratings |
|---|----------------|
| When faced with an IT question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find the right person from your firm to consult with? | |
| When faced with an IT question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find the right person from his/her own firm to consult with? | |
| When faced with an IT question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find the right person from outside your firm or his/her own firm (e.g., consultants, other vendors) to consult with? | |
| When faced with an IT question or problem related to this project that cannot be solved alone, how confident are you that the vendor project manager is able to find other relevant sources of business information including Internet sites, magazines, trade journals, and conferences? | |

| | | | | |
|----------------------|--------------------------------------|---------------------------------|--------------------|-----------------------------|
| 1 | 2 | 3 | 4 | 5 |
| Inexperienced | Only Slightly Experienced | Somewhat Experienced | Experienced | Very Experienced |

| IT Project Experience Questions | Ratings |
|---|----------------|
| How experienced do you think the vendor project manager is in initiating new Information Systems projects? | |
| How experienced do you think the vendor project manager is in identifying the cost and benefits of Information Systems projects before they are developed; preparation of business cases? | |
| How experienced do you think the vendor project manager is in managing Information Systems projects? | |
| How experienced do you think the vendor project manager is in developing Information Systems projects? | |

| IT Project Experience Questions | Ratings |
|--|----------------|
| How experienced do you think the vendor project manager is in creating an IT vision statement regarding how IT contributes to business value and strategy? | |
| How experienced do you think the vendor project manager is in developing IT strategy? | |
| How experienced do you think the vendor project manager is in creating IT policies? | |
| How experienced do you think the vendor project manager in setting IT budgets? | |

| 1 | 2 | 3 | 4 | 5 |
|---------------------------------|------------------------------------|-------------------------------|----------------------|--------------------------------|
| Not Knowledgeable At All | Only Slightly Knowledgeable | Somewhat Knowledgeable | Knowledgeable | Extremely Knowledgeable |
| Inexperienced | Only Slightly Experienced | Somewhat Experienced | Experienced | Very Experienced |

| Knowledge of IT Standards Questions | Ratings |
|--|----------------|
| What do you think is the vendor project manager's general knowledge of organizational related IT standards such as CMMI, ISO or COBIT? | |
| How experienced do you think the vendor project manager is in developing projects that follow a particular IT standard guidelines? | |
| How experienced do you think the vendor project manager is in implementing a particular IT standard guidelines to existing systems? | |
| How experienced do you think the vendor project manager is in auditing an organization or division based on a particular IT standard guidelines? | |

Using the scale given, please assess *your own leadership behaviours as well as the vendor project manager's leadership behaviours specific to the project*. Please respond to all parts of the survey as honestly as possible.

| | | | | | | |
|-------------------------|------------------------|---------------|---------------------|-------------------|----------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Almost Never | Very Seldom | Seldom | Occasionally | Frequently | Very Frequently | Almost Always |

| Leadership Behaviours | Self | Vendor |
|--|-------------|---------------|
| Comes up with inventive ideas for the project. | | |
| Ensures no disruption in the day-to-day operations of the project. | | |
| Exerts influence in the client firm. | | |
| Carefully reviews detailed project reports. | | |
| Maintains a “results” orientation in the project. | | |
| Facilitates consensus building in the project. | | |
| Defines areas of responsibility for those involved in the project. | | |
| Listens to the personal problems of others in the project. | | |
| Minimizes disruptions to the project workflow. | | |
| Experiments with new concepts and procedures for the project. | | |
| Encourages participative decision-making from those involved in the project. | | |
| Makes sure everyone knows the direction of the project. | | |
| Influences decisions made by the client firm. | | |
| Compares project records and reports to detect discrepancies. | | |
| Sees the project delivers on stated goals. | | |
| Shows empathy and concern in dealing with others in the project. | | |
| Works with technical information related to the project. | | |
| Gets access to people at higher levels within the client firm. | | |
| Sets clear objectives for the project. | | |
| Shows concern for the needs of others in the project. | | |
| Keeps track of what goes on in the project. | | |
| Does project problem solving in creative, clever ways. | | |
| Pushes those involved in the project to reach objectives. | | |
| Encourages those involved to share ideas in the project. | | |
| Searches for innovation and potential improvements in the project. | | |
| Clarifies priorities and directions for the project. | | |
| Persuasively sells ideas to the client firm. | | |
| Brings a sense of order to the project. | | |
| Treats each individual involved in the project in a sensitive, caring way. | | |
| Emphasizes project's achievement of stated purposes. | | |
| Builds teamwork among those involved in the project. | | |
| Analyzes written project plans and schedules. | | |

Appendix F: Sample Interview Protocol for Third-Party Team Members

General instructions:

This document contains the interview guides for the team member. The questions will be personalized to reflect the interviewee's IT project, company, and people. For example, the phrase "<<this project>>" will be changed to the "actual project nickname" whenever possible.

Introduction Script:

Thank you for agreeing to participate. The purpose of this interview is to gather information related to my research work. I am currently examining skills and knowledge in Information Systems outsourcing project managers.

I will take the necessary precautions to maintain the confidentiality of this project such as removing the names, and other personal identifiers. However, I will need to record our interview today. Only myself and my two other co-researchers will have access to this recording. Do I have your permission to record this interview? Thank you.

The general format of this interview is: First, I need some information about your work. Second, I will ask you about your skills and knowledge. And finally, we will talk about the project itself.

Do you have any questions before we begin this interview?

Team Member's Background Information

For clarification, I would like to state here that I am trying to collect data related to the <<this project>>.

Please tell me briefly about your involvement in <<this project>>. I need to know your role, the duration of your involvement, and at which stage in this project you started to become involved.

Before we go further, I would just like you to know that I refer to <<client project manager's name>> as the <<client's>> project manager, and <<vendor project manager's name>> as the <<vendor's>> project manager.

Project Outcome

1. On a scale of 1 to 10, with 10 being the most successful, how would you rate the success of <<this project>>?
2. In what aspects do you consider <<this project>> a success?

3. What are the things you can improve? (Request team member to justify their answers – schedule, budget, client satisfaction, vendor’s value propositions – cost, client-vendor relationship)

Linking Items⁵⁵

4. Why did your company (or department) decide to outsource this project? (Client team member only)

<<Re-cap outcome of this project>>

5. Were there factors (or events) that influenced the outcome of <<this project>>? For example, change of management, technology issues, and market competition. Maybe you can go through phase by phase.

(What happened? How was it handled? When? People involved? Effects? How can this issue be better handled?)

6. When I look at <<the documents>>, I see a few major issues that occurred for this project. These issues: <<this question must be customized for each case site>>

- (i). **Requirements** – additional/changing requirements by users, and customization issues.
- (ii). **Technical** – late delivery of hardware, database error, acceptable downtime, data issues.
- (iii). **Users** – coordinating dates for CRP and training, getting sign-off from key users, user expectation (i.e., document management system).
- (iv). **Post-implementation** – additional man-days for post-implementation support.

How did <<the client PM>> handle it? What do you think enable him to handle this situation? What do you think would help him to better handle this situation?

How did <<the vendor PM>> handle it? What do you think enable him to handle this situation? What do you think would help him to better handle this situation?

7. Do you feel that <<your company>> had an open communication channel with <<the vendor company>>? For example, team members from the two companies were accessible to each other, quick response?

On a scale of 1 to 10, with 10 being the most open communication channel, what would be your rating? Why do you choose <<this rating>>?

⁵⁵ Questions 7 until 16 in this category are adapted from Reich (1992).

8. Do you feel that for this project, <<your project manager>> had an open communication channel with <<the vendor>>? For example, he/she was able to contact people from <<the vendor easily>>, received quick response.

If yes, on a scale of 1 to 10, with 10 being the most open communication channel, what would be your rating?

Why do you choose <<this rating>>?

If no, why do you say “no”?

What about specific members from <<the vendor company>>?

(Management, project manager, IT people → various stakeholders)

9. Do you feel that for this project, <<the vendor project manager>> had an open communication channel with <<the client>>? For example, he/she was able to contact people from <<the client easily>>, received quick response.

If yes, on a scale of 1 to 10, with 10 being the most open communication channel, what would be your rating?

Why do you choose <<this rating>>?

If no, why do you say “no”?

What about specific members from <<the client company>>?

(Management, project manager, IT people, users → various stakeholders)

10. To the best of your knowledge, can you describe the communication that passes between <<the client project manager>> and:

(i). Vendor management

(ii). Vendor project manager

(iii). Vendor IT members

Discuss the frequency, type (verbal, written, face-to-face, phone call), duration and typical content for each form of communication.

11. To the best of your knowledge, can you describe the communication that passes between <<the vendor project manager>> and:

(i). Client management

(ii). Client project manager

(iii). Client IT members

(iv). Users

Discuss the frequency, type (verbal, written, face-to-face, phone call), duration and typical content for each form of communication.

12. Were there other forms of communication between your company and <<the vendor company>> not included in my previous questions? For example, social outings, gatherings, etc.? Elaborate on the situation, frequency, and discussion topics.

13. What were the positive aspects of communication with <<the vendor>>?

14. What were the areas that require improvement?

15. For this project, how would you describe your company's overall relationship with <<the vendor company>>?

On a scale of 1 to 10, with 10 being the most satisfactory, what would be your rating? Why do you choose <<this rating>>?

16. For this project, how would you describe <<the client/vendor project manager's>> overall relationship with <<the client/vendor company>>?

On a scale of 1 to 10, with 10 being the most satisfactory, what would be your rating?

→ Ask for both client and vendor PM

Why do you choose <<this rating>>?

What about specific members from <<the client/vendor company>>?

(Management, project manager, IT people, users → various stakeholders)

17. Do you, or do expect <<your project manager>> to have any responsibilities associated with the newly developed system after its completion? If so, please describe.

18. Do you, or do you expect <<the client/vendor project manager>> to have any responsibilities associated with the newly developed system after its completion? If so, please describe.

Concluding Questions

19. Are there questions that I have not asked but should have asked? What would you like to add?

Thank you.

Appendix G: Guide for Case Study Report

1. ISO Project

Background description about the ISO project (e.g., type of project, cost, scheduled duration, actual duration, divisions/departments, main users, etc)

- a. ISO Relationship Type
Analysis of strategic impact
Analysis of extent of substitution
Summary
- b. Project Outcome
Analysis of the following success criteria: (1) schedule/budget, (2) requirements/expectations, (3) client-vendor relationship and (4) vendor's value proposition
Summary

2. PM Competencies

Overview of the competencies for client and vendor PM

- a. Client PM Competencies
Analysis of client PM's business, IT and leadership competencies
Summary – overall ratings
- b. Vendor PM Competencies
Analysis of vendor PM's business, IT and leadership competencies
Summary – overall ratings

3. Findings

Compare propositions with actual findings

Which ones are supported? Which ones are not supported?

- a. Tasks/Issues
Any link from competencies → tasks/issues → outcome
- b. Communication
Any link from competencies → communication → outcome
- c. Alternate Explanation(s)
Any other possible link from competencies → emerging factor → outcome

4. Discussion

- a. Explanation for Discrepancies
Discuss discrepancies between propositions and actual findings
- b. Overall Project Outcome
Discuss other factors that might influence project outcome

5. Summary

Appendix H: Maintaining Chain of Evidence
Linking Case Study Questions to Case Study Protocols

This documentation is created to maintain a chain of evidence for the conduct of the case study. It allows for investigators to identify the source of information from the data collection stage.

Table 20 displays the required company and ISO project background information. The information must be retrieved before any scheduled interview. Possible sources of information include: company websites, public brochures/prospectus, and answers given by informants during the screening process.

Table 20: Required Background Information for Companies and Projects

| |
|--|
| Background of Company |
| <ul style="list-style-type: none"> ▪ Industry ▪ Core business and market niche ▪ Size ▪ Brief company history – Years in operation, growth, clients/partners, and directions. ▪ Company’s IT history – Overview of IT department, vendors, past and current IT initiatives, annual budget and general level of outsourcing (e.g., total, selective, insourcing). |
| Background of Project |
| <ul style="list-style-type: none"> ▪ Goals and objectives ▪ Type ▪ Budget ▪ Duration (start date and end date) ▪ Number of client team members ▪ Number of vendor team members ▪ Client divisions involved ▪ Primary users (number and type) ▪ Number of functionalities ▪ Outsourcing relationship type ▪ Level of success |

Table 21 links the required background information to its specific source of information (i.e., interview protocol for client project managers in Appendix D). The required background information is mainly based on self-report.

Table 21: Required Background Information for Project Managers and Source of Information

| Background of Project Manager | Source of Information: Project Manager Interview Protocol |
|--|--|
| Work experience <ul style="list-style-type: none"> ▪ Other companies ▪ Current company | <i>Questions: 1, and 2.</i> |
| <ul style="list-style-type: none"> ▪ Training sessions ▪ Business/Company knowledge ▪ IT knowledge ▪ Leadership/Project management | <i>Questions: 4, 5, 6, and 7.</i> |
| IT project experience | <i>Question: 3</i> |
| Current position | <i>Question: 1</i> |
| Relevant skills for current position | <i>Question: 2, 3, 4, 5, 6, and 7.</i> |

Table 22 links the tasks and competencies of project managers to questions in the project manager (Appendix D) and team member (Appendix F) interview protocols. In addition to the interview protocols, we suggest documents such as minutes of meetings as another source of valuable information.

Table 22: Required Information for Tasks & Competencies of Project Managers and Sources of Information

| Tasks & Competencies: | Sources: Project Manager Interview Protocol & Questionnaire | Source: Team Member Interview Protocol & Documents |
|--|--|---|
| Overall competencies at the beginning of the project <ul style="list-style-type: none"> ▪ Business ▪ IT | <i>Interview Protocol Questions: 13, 14, 15, and 16.</i> | |
| Overall competencies after the completion of the project <ul style="list-style-type: none"> ▪ Business ▪ IT ▪ Leadership Specific assessment for each item under business, IT and leadership. | <i>Questionnaire (Appendix E)</i> | <i>Interview Protocol Questions: 6</i> <i>Minutes of meetings – Assessment of competencies can be made by identifying leadership behaviours (e.g., chairing meetings, securing resources), and displaying business or IT knowledge (e.g., offering solutions to business/technical problems). These behaviours are typically noted in the minutes of meetings.</i> |
| Responsibilities and tasks (Inclusive of flexibility/control mode and internal/external outlook). | <i>Interview Protocol Questions: 8, 9, 10, 11, and 12.</i> | |
| Important skills and knowledge | <i>Interview Protocol Questions: 2</i> | |

Table 23 displays the linking items⁵⁶ and their sources of information. We identified three potential sources of information for the linking items – project manager interview protocol (Appendix D), team member interview protocol (Appendix F), and documents (e.g., project proposal, written communication between client and vendor).

Table 23: Linking Items to Source of Data

| Linking Items | Source: Project Manager Interview Protocol | Source: Team Member Interview Protocol | Source: Documents |
|--|--|---|--|
| Decision to outsource | <i>Interview Protocol Questions: 17</i> | <i>Interview Protocol Questions: 4</i> | Project proposal |
| Communication | <i>Interview Protocol Questions: 18, 19, 20, 21, 22, 23, 24, 25, and 26.</i> | <i>Interview Protocol Questions: 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14.</i> | Available and accessible written communications between client-vendor firms and/or project managers. |
| Relationship | <i>Interview Protocol Questions: 27 and 28.</i> | <i>Interview Protocol Questions: 15 and 16.</i> | |
| Future responsibilities and tasks <ul style="list-style-type: none"> ▪ Client ▪ Vendor | <i>Interview Protocol Questions: 29 and 30.</i> | <i>Interview Protocol Questions: 17 and 18.</i> | Project proposal |

Table 24 exhibits the linking items and the related propositions (Section 4.2).

Table 24: Linking Items to Propositions

| Linking Items | Related Propositions |
|--|----------------------------------|
| Flexibility vs. control | 3a, 3b, 3c and 3d. |
| Internal vs. external | 3a, 3b, 3c and 3d. |
| Project manager’s responsibilities and tasks | All |
| Project manager’s important skills and knowledge | All |
| Project manager’s newly developed skills and knowledge | 1, 2a, 2b, 2c and 2d. |
| Decision to outsource | 3a and 3c. |
| Communication | All |
| Relationship | 2d and 3d. |
| Future responsibilities and tasks <ul style="list-style-type: none"> A. Client B. Vendor | A – 2c and 3c. B – 2b and 3b. |

⁵⁶ Linking items are items, which based on our propositions (Section 4.2), link competencies to ISO project outcomes.