MANAGING ORGANIZATION-PACKAGE-STAKEHOLDER (OPS) FIT DURING AN ENTERPRISE SYSTEM IMPLEMENTATION: A PROCESSUAL ANALYSIS

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Abstract

The widespread implementation of Enterprise System (ES) packages is one of the more significant IT developments in recent years. ES benefits include providing a wealth of real-time information, eliminating redundant data, enhancing strategic decision-making, and tightening interdependencies among departments. However, understanding ES implementations remains challenging in part due to the over-reliance on analyzing generic IS implementation metrics and critical success factors, rather than considering unique ES implementation issues. One such challenge identified in this study is the alignment of organization functionality, package features and stakeholder interests (OPS). This study thus seeks to address this gap in ES implementation research by asking the research question "how can OPS fit be managed in the implementation of Enterprise System". The contingency theory of leadership was used as the theoretical sense-making lens in this endeavour. The interpretive case study methodology was adopted to examine the ES implementation of two organizations and an analysis of these cases led to the development of a process model of managing OPS fit during ES implementation. The cross-case analysis yielded four findings that addressed the research question. This study contributed towards the theoretical development of research on managing OPS fit during ES implementation and the contingency theory of leadership. Implications for practitioners were also offered based on the findings of this study.

1 Introduction

A key IT development in recent years was the widespread implementation of Enterprise System (ES) packages (Cotteleer & Bendoly, 2006; Markus et al., 2000b; Morris & Venkatesh, 2010). At least 80 percent of Fortune 500 firms adopted Enterprise Resource Planning (ERP) systems alone (Gattiker & Goodhue, 2005), and many small- and medium-sized companies followed suit (Klaus et al., 2000). The term ES also covers other popular systems such as Customer Relationship Management (CRM) and Supply Chain Management (SCM) systems (Seddon et al., 2010; Soh & Sia, 2005; Ward et al., 2005).

ES reputedly deliver great rewards (Davenport, 1998; Gattiker & Goodhue, 2005; Markus e al., 2000b), such as faster systems development, improved order management, and a single face to customers (Al-Mashari et al., 2004; Luo & Strong, 2004; Markus & Tanis, 2000). Many cases expounded ES benefits following successful implementation in companies like Owens Corning, IBM, Microsoft and Texas Instruments (Adam & O'Doherty, 2000; Davenport, 1998; Karimi et al., 2007a). This coincided with a boom in ES adoption (Hirt & Swanson, 2001; Markus & Tanis, 2000).

ES implementations though, are more complex than traditional IS projects (Davis et al., 2009; Ko et al., 2005; Luo & Strong, 2004; McGinnis & Huang, 2007). They carry great risks (Davenport, 1998; Parr & Shanks, 2000), and have a greater impact than less complicated IS (Liang et al., 2007). They are technically challenging (Davenport, 1998; Wang & Ramiller, 2009), and often time-consuming and expensive (Cotteleer & Bendoly, 2006; Karimi et al.,

2007b; Lee et al., 2003). About 90% of ERP implementations were late or over budget (Al-Mashari et al., 2003). Thus, failed ES implementations were also commonly cited in literature (Luo & Strong, 2004; Nah et al., 2001).

One key challenge is that ES are typically external packages embedded with vendor-defined best business practices (Cotteleer & Bendoly, 2006; Liang et al., 2007; Luo & Strong, 2004) that may not fully fit the functional needs of many firms (Light, 2005). Organizations therefore often have to conduct post-purchase tailoring to alleviate this misfit (Bose et al., 2008; Sawyer, 2000; Soh & Sia, 2005; Velcu, 2010).

Another key challenge is that the organization-wide integrative nature of ES (Jones et al., 2006; Nah et al., 2001; Soh & Sia, 2004) necessitates involving multiple stakeholders across the firm, while its packaged nature requires external vendor or consultant involvement (Davis et al., 2009; Wang et al., 2006). They are affected by the firm's actions and could affect the firm's performance and survival (Adelakun & Jennex, 2002; Scott & Lane, 2000).

Managing these stakeholders requires consideration of several individual characteristics (Agle et al., 1999; Homan et al., 2008; Light, 2005). Identity affects their commitment, behaviour and contributions (Ellemers et al., 2004; Johnson & Yang, 2010) during ES projects. Power is their ability to get other people to do something that they would not have otherwise done (Agle et al., 1999). Effective ES projects requires proper management of their diverse knowledge (Hitt et al., 2002; McGinnis & Huang, 2007; Van den Hooff &

Huysman, 2009) and facilitation of knowledge sharing for effective coordination (Bose et al., 2008; Chow & Chan, 2008; Singh & Tan, 2010). Studies suggested that these three concepts are inter-related (Nag et al., 2007).

Furthermore, stakeholders do not exist in isolation so their inter-relationships are also pertinent (Rowley, 1997). According to Conway's Law, the architecture and organization of software products depended on the communication patterns of the contributors (Singh & Tan, 2010). However, the importance of stakeholders was largely undermined in ES practice (Papazafeiropoulou et al., 2002).

Much of prior ES implementation research overlooked such unique challenges in favour of traditional project management metrics of success or business benefits (Robey et al., 2002). In contrast, this study helps plug this important gap in ES implementation research by advocating a study of Organization-Package-Stakeholder (OPS) fit, which involves managing the concurrent fit between organizational functionality, package features and stakeholder needs. This is in line with calls for more studies on greater fit between tasks, technologies and actors (Dishaw & Strong, 1999; Hong & Kim, 2002). Studies suggested that understanding fit was important since misalignment could lead to disastrous project failures, system incompatibility with the business, and dissatisfied stakeholders (Chen, 2010).

Leaders of ES implementations though, reportedly require a good match between their leadership orientation and situational characteristics to manage

OPS fit more effectively (Fiedler, 2005). The complexity of ES projects also begged the question of whether a single leader could successfully perform all the necessary leadership functions (Carson et al., 2007). More insight was thus required on which leadership style was most appropriate to manage OPS fit during ES implementation, as it affects his behaviour in that situation (Utecht & Heier, 1976). Moreover, while the contingency theory of leadership model incorporated three situational variables that moderated leadership style (Fiedler, 2005) more insight was needed to uncover the situational variables that are pertinent in the context of managing OPS fit in ES implementation.

Since a firm's ES implementation has several phases (Markus & Tanis, 2000), a static snapshot of these issues provides limited insight into the dynamic moving target of alignment (Oh & Pinsonneault, 2007; Venkatraman, 1989). This study thus adopted a processual view (Newman & Sabherwal, 1989; Sabherwal & Robey, 1995) of managing OPS fit during an ES implementation to understand the interplay between these issues during the ES project process.

To have a better structure and focus for this study, the research question of "how can OPS fit be managed in the implementation of Enterprise System" was examined via two cases of ES implementation. Both cases were Singaporean organizations that achieved recognition in their respective fields for exemplary business processes that were supported by their ES. The first case was the implementation of Learning Environment Online (LEO) in Republic Polytechnic (RP). The second case was the implementation of Enterprise Business System (EBS) in Singapore Power Services (SPS).

Both cases were analyzed using an interpretive case study methodology (Klein & Myers, 1999; Walsham, 1993). Within-case analysis for each case led to a conceptual framework on managing OPS fit during each ES implementation. Cross-case analysis then led to a process model of managing OPS fit during ES implementation and identification of 17 ways of enacting moderation of a leadership style by a contingency variable while managing this process.

This study yields four findings pertaining to the process of OPS fit management in ES implementation in response to the research question. Besides practical implications for managers, this study offers theoretical implications for ES implementation, OPS fit management, stakeholder management, and the contingency theory of leadership.

The remainder of this thesis is structured as follows. The next section covers literature reviews of ES, stakeholder management, OPS fit, contingency theory of leadership and process theory. The research methodology section then explains the underlying research philosophy and methodology undertaken in this study to collect and analyze the data from the two cases, and includes personal reflections on conducting fieldwork. Next is the description of the two cases, followed by their within-case analysis, cross-case analysis and four findings. Finally, this thesis evaluates theoretical and practical implications of this study, and discusses several limitations and suggestions for future research.

2 Literature Review

2.1 Enterprise Systems

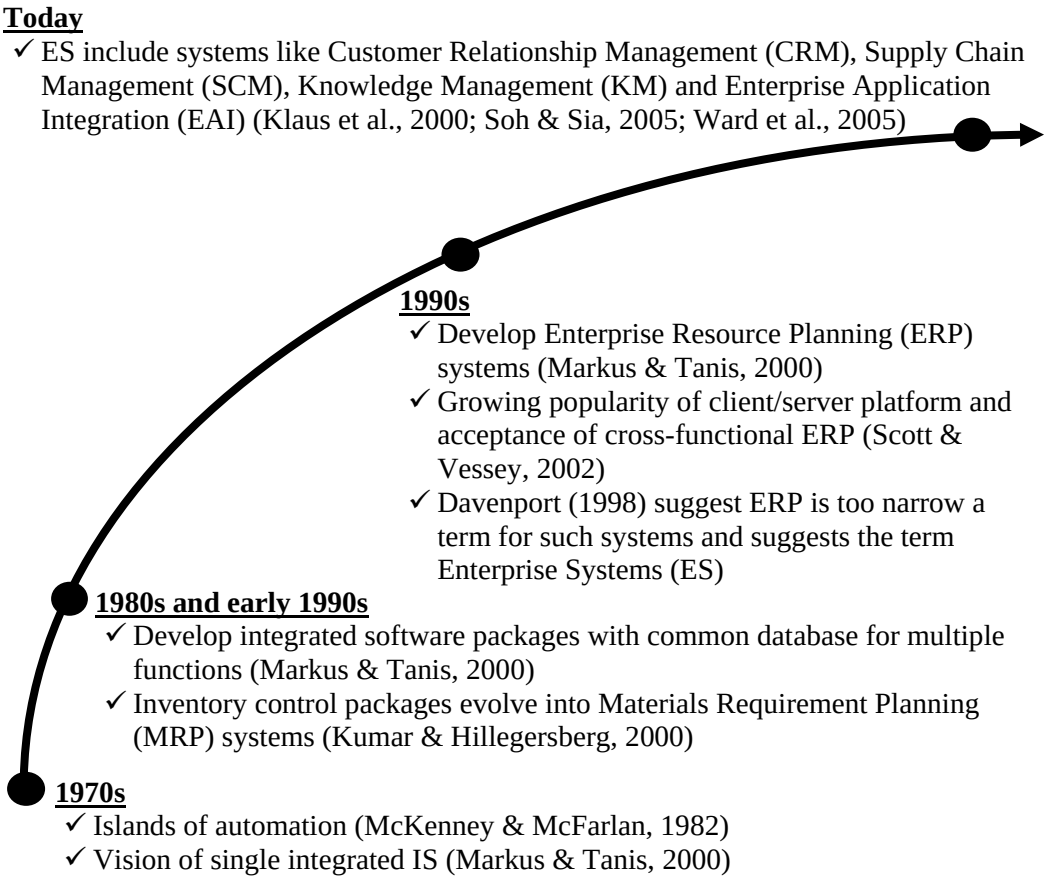
2.1.1 Overview of Enterprise Systems

The business world's embrace of ES may be the most important development in the corporate use of IT in the 1990s (Akkermans & van Helden, 2002; Davenport, 1998; Robey et al., 2002) and its history can be traced back to the 1970s (see Figure 1). ES is any organization-wide system that impacts across a firm's boundaries (Huang & Palvia, 2001; Ko et al., 2005; Robey et al., 2002) to affect many internal and external business operations (Markus et al., 2000a). ES integrate organizational business processes (Devadoss & Pan, 2007; Koch, 2001; Rosemann & Watson, 2002; Wagner & Newell, 2004) and functional departments across the firm (Gattiker & Goodhue, 2005; Howcroft & Light, 2002; Lee & Lee, 2000; Ross & Vitale, 2000; Scott & Vessey, 2002; Sumner, 2000). This may even extend to supply chain partners (Gefen, 2004; Markus & Tanis, 2000) and customers (Gefen & Ridings, 2002).

ES also integrate software (Hitt et al., 2002), applications (Davenport, 2000) and systems (Nah et al., 2001) across different ES modules and computing platforms (Jones et al., 2006; Somers & Nelson, 2003). Its database may be centralized (Al-Mashari et al., 2003; Chellappa & Saraf, 2010; Hirt & Swanson, 2001; Lee & Lee, 2000; Robey et al., 2002) or integrated (Davenport, 1998; Klaus et al., 2000; Koch, 2001). ES are multi-module packages and firms can choose to implement only those modules that are most appropriate for them (Akkermans & van Helden, 2002; Chellappa & Saraf, 2010; Hitt et al., 2002; Huang & Palvia, 2001; Karimi et al., 2007a). The more

modules installed though, the greater the integration benefits but the higher the costs, risks and changes required (Davenport, 1998; Karimi et al., 2007a). ES are also constantly and rapidly evolving (Davenport, 2000; Pan & Tan, 2005), as evidenced by vendors' rapid upgrades and new software releases (Light et al., 2001; Robey et al., 2002).

Figure 1: Timeline of Enterprise Systems Development



ES offer many benefits. They improve information flow (Davenport, 1998) and standardize data (Markus & Tanis, 2000) to give direct access to a wealth of real-time information (Robey et al., 2002) and strategic decision information (Bingi et al., 1999). This facilitates comprehensive data analysis (Hitt et al., 2002) and eliminates redundant data and repositories (Sumner,

2000). ES facilitate faster attainment of project objectives (Light & Papazafeiropoulou, 2004) and delivery of complex systems (Butler, 1999). ES reduces over-reliance on expert staff (Gefen, 2004). Finally, ES fosters closer cooperation, learning and interdependencies across departments (Cotteleer & Bendoly, 2006; Ross & Vitale, 2000).

The ES market grew (Hirt & Swanson, 2001; Markus & Tanis, 2000) and many firms adopted ES (Gattiker & Goodhue, 2005; Klaus et al., 2000; Sia & Soh, 2007) as 'must have' parts of their make-up (Sheu et al., 2004), sharing many success stories (see Appendix B). One of the world's largest ES vendors, SAP, saw revenues soar from about $500 million in 1992 to about €12,464 million in 2010 (SAP.com, 2011). The worldwide market of ERP packages alone is growing at an annual rate of about 4.8% (Xu & Ma, 2008).

ES packages, however, could be challenging to implement (Akkermans & van Helden, 2002; Sheu et al., 2004), as they are high-risk projects (Davenport, 1998; Markus & Tanis, 2000; Markus et al., 2000a; Parr & Shanks, 2000). For example, they require a wide range of knowledge and skills (Davenport, 1998; Kræmmergaard & Rose, 2002; Xu & Ma, 2008), which increases reliance on external consultants and vendors, thus contributing to deskilling of internal organizational skills (Cha et al., 2008). Consequently, firms periodically upgrade their packages to avoid conversion headaches (Light, 2005), and are less likely to replace their vendors in the short term due to high switching costs (Gable et al., 2001). However, regular upgrading may override unique business functionality (Sherer, 1993),

ES implementations also tend to overrun time and budget constraints (Lee et al., 2003, Jones & Price, 2001; Robey et al., 2002). About 90% of ES projects end up late or over budget (Al-Mashari et al., 2003; Gable et al., 2001), as ES projects take an average of 21 months to complete (Hitt et al., 2002) with some taking as long as five years (Ko et al., 2005), and ES investments may range from $50 million to over $500 million (Davenport, 1998). Only about 7% of ES projects finished on time and on budget (Williams, 2010).

ES projects thus have high failure rates (Gable et al., 2001; Luo & Strong, 2004; Osei-Bryson et al., 2008; Sarker & Lee, 2003; Soh & Sia, 2005), with several researchers estimating that about half of them failed (Devadoss & Pan, 2007; Robey et al., 2002). Failures ranged from the inability to achieve anticipated benefits (Soh & Sia, 2005; Robey et al., 2002) to drops in profit or bankruptcy (Liang & Xue, 2004; Rowley & Moldoveanu, 2003; Ward et al., 2005). Companies that suffered ES implementation problems include AeroGroup, AMR Corporation, Boeing, Dell Computer, Dow Chemical, FoxMeyer Drugs, Hershey Foods, Mobil Europe, Nash Finch, Siemens and Panasonic (Adam & O'Doherty, 2000; Davenport, 1998; Karimi et al., 2007a; Markus & Tanis, 2000; Robey et al., 2002) (see Appendix C).

Most ES project research though, focused on critical success factors (Akkermans & van Helden, 2002; Karimi et al., 2007a; Osei-Bryson et al., 2008; Soh & Sia, 2004). This is limited, as the factors typically emphasized traditional generic project management metrics or business issues (Al-

Mudimigh et al., 2001; Robey et al., 2002). Furthermore, ES projects are more complex than traditional IS projects (Lee et al., 2003; Luo & Strong, 2004; Markus et al., 2000b). Thus, although there was substantial research done on ES implementation, there remain many more unique ES implementation issues that warrant further study, such as the concurrent challenge of conducting post-purchase tailoring to alleviate package-business misfit, and aligning this with the needs of diverse ES implementation stakeholders.

2.1.2 External Packages

One unique challenge relates to the external nature of ES packages. While in principal, ES can be developed in-house, it is synonymous with commercial packages (Davenport, 1998; Markus & Tanis, 2000; Markus et al., 2000a; Pan & Tan, 2005) developed by vendors (Baskerville et al., 2000; Howcroft & Light, 2002; Kauffman & Tsai, 2009). Companies can purchase or lease these packages (Davenport, 2000; Howcroft & Light, 2002; Markus & Tanis, 2000; Sawyer, 2000), and seek experienced partners to assist in implementing (Adam & O'Doherty, 2000; Markus et al., 2000b) and maintaining (Butler, 1999; Markus et al., 2000a; Sumner, 2000) them, especially partners experienced in their particular industry (Markus & Tanis, 2000). Firms may engage in unified procurement and buy everything from a single vendor, or purchase from multiple vendors (Kauffman & Tsai, 2009). Consequently, ES projects require in-depth package software knowledge (Ko et al., 2005), which increases dependence on external parties (Markus & Tanis, 2000).

ES packages are tried and tested solutions with a proven track record of success (Butler, 1999; Howcroft & Light, 2002; Lee & Lee, 2000; Light & Papazafeiropoulou, 2004). They embody implicit ready-to-use business logic and best practices (Davenport, 1998; Howcroft & Light, 2002; Light et al., 2001; Luo & Strong, 2004; Markus & Tanis, 2000; Nah et al., 2001). For example, SAP R/3 contains about 1000 pre-configured business reference models (Koch, 2001; Lee & Lee, 2000).

However, not all companies appreciate these best practices, as they prescribe how the company should do business (Themistocleous et al., 2001), thus imposing their own logic on the adopting firm and dictating how its strategy, organization and culture should be structured (Davenport, 1998; Devadoss & Pan, 2007; Lee & Lee, 2003; Umble et al., 2003). Furthermore, the external parties generally believe in a 'one size fits all' generification strategy, in which they take a package that works well in one place and attempt to make it work everywhere else (Pollock et al., 2003).

Moreover, these best practices are largely generic assumptions that reflect the market-based perspectives of vendors and consultants about how firms operate, rather than the views of companies (Davenport, 1998; Soh & Sia, 2005). Thus, the way the institutional context of referent organizations was filtered through the package developers' cognitive lenses and embedded in the software to bind client firms to fundamental business choices, provides an underlying reason for misfits with organizational needs (Sia & Soh, 2007).

Prior research thus highlighted potentially large gulfs between organizational needs and ES packages' espoused best practices (Al-Mashari et al., 2003; Lassila & Brancheau, 1999; Lucas et al., 1988; Pollock et al., 2003; Umble et al., 2003; Wagner & Newell, 2004). Researchers attributed this to the lack of a single universal 'best practice' (Liang et al., 2007; Sheu et al., 2004) due to inherent conflicts between ES and business logic (Al-Mudimigh et al., 2001).

Such misfits often affect the project performance (Oh & Pinsonneault, 2007) and outcome (Hong & Kim, 2002; Light, 2005). Several researchers even attributed the high failure rate of ES projects to such misfits (Hong & Kim, 2002; Soh & Sia, 2005; Wang et al., 2006). The challenge in resolving these misfits is compounded by the fact that several ES packages exclude unique organizational functionality (Sherer, 1993), as some companies find at least 20% of their requirements missing from ES package functionality (Light, 2005).

Most ES packaged software thus requires post-purchase tailoring (Karimi et al., 2007b; Sawyer, 2000; Soh & Sia, 2005), which can be risky (Liang et al., 2007). This entails changing business processes to fit the package or customizing the package to fit business needs (Lucas et al., 1988; Osei-Bryson et al., 2008; Pollock et al., 2003; Soh & Sia, 2005; Sykes et al., 2009).

The first option entails embracing the best practices inherent in the package without modification and reengineering the firm's business processes to fit the package (Al-Mudimigh et al., 2001; Gattiker & Goodhue, 2005; Hong & Kim,

2002; Somers & Nelson, 2003; Umble et al., 2003; Wagner & Newell, 2004). This is preferred by many vendors and firms (Wang & Ramiller, 2009).

The second option ranges from choosing from built-in reference processes and parameters to changing package source codes (Gefen & Ridings, 2002; Klein & Rai, 2009; Kutar & Light, 2005; Themistocleous et al., 2001; Wang & Ramiller, 2009). This is similar to 'reinvention' in the innovation diffusion literature, which is the extent to which the user modifies an IT after its original development (Lassila & Brancheau, 1999). For example, SAP R/3 has over 3000 modifiable configuration tables to improve fit (Davenport, 1998).

Views on which is more desirable remain conflicting (Hong & Kim, 2002) (see Table 1). Several researchers therefore suggested a combinatory 'mutual adaptation' strategy that adapted both approaches (Lassila & Brancheau, 1999), but there are concerns that this may further complicate the project (Hong & Kim, 2002; Lassila & Brancheau, 1999; Pollock et al., 2003).

Regardless of the resolution strategy employed, the underlying challenge of addressing potential misalignments between ES package features and organizational functionality is undeniably critical to ES project success (Gattiker & Goodhue, 2005; Hong & Kim, 2002; Luo & Strong, 2004; Nah et al., 2001). However, broad-based empirical research in this area has been lacking (Hong & Kim, 2002; Wang et al., 2006), despite calls for better fit of firms and packages to facilitate successful ES implementation (Esteves & Bohorquez, 2007, Luo & Strong, 2004; Wang et al., 2006).

Table 1: Comparing Two Common ES Post-Purchase Tailoring Approaches

Comparison	Change Business Processes	Customize Package
Advantages	- Widely advocated by researchers, practitioners and vendors (Hirt & Swanson, 1999) - Redistribute responsibilities and roles (Lee & Lee, 2000) - Reduce silo effect (Jones & Price, 2001) - Avoid high cost of package modification (Sherer, 1993)	- Accommodate idiosyncratic or unique requirements (Velcu, 2010) - Appealing if changing core business functionality is infeasible (Pollock et al., 2003) - Lower user resistance, reduce training needs, reduce organizational adaptation (Hong & Kim, 2002)
Drawbacks	- Adds to expense and risk of project (Markus & Tanis, 2000) - Higher dependence on external parties than in past technological regimes (Davenport, 2000) - Disrupt equilibrium of existing business structures and activities (Lassila & Brancheau, 1999) - Only possible if firm can change (Soh & Sia, 2005) - Undermine competitive edge due to similar processes in many firms (Light et al., 2001)	- Difficult, costly, risky and time-consuming (Velcu, 2010) - Packages difficult to change to high level of integration (Swanson,1999) - Increase the risk of introducing system errors (Nah et al., 2001) - Customized package is hard for vendors to maintain and upgrade (Luo & Strong, 2004)

2.1.3 Multiple Stakeholders of ES Implementation

Another unique issue that exacerbates facilitating feature-function fit relates to ES stakeholders. ES projects are socio-technical challenges (Boonstra et al., 2008; Brown & Vessey, 2003; Newell et al., 2002; Papazafeiropoulou et al., 2002) that involve multiple stakeholders (Akkermans & van Helden, 2002; Koch, 2001; Pan, 2005; Rosemann & Watson, 2002; Soh & Sia, 2005) from within and outside the firm (Akkermans & van Helden, 2002; Light et al., 2001; Markus & Tanis, 2000; Schneider, 2002) (see Table 2).

Table 2: Potentially Relevant Internal and External Stakeholders

Internal	**External**
• Managing Director • CIO • Steering Committee • Board Members • Managers • Employees • IS analysts and programmers	• Owners • Shareholders • Investors • Creditors • Business Partners • Customers • Suppliers • Manufacturers • Distributors • Consultants and Vendors • Competitors • Labor Unions • Environmental Groups • Government Regulators

Stakeholders are affected by the actions and decisions of the firm, and they in turn affect the firm's performance and survival (Adelakun & Jennex, 2002; Akkermans & van Helden, 2002; Scott & Lane, 2000). They possess diverse knowledge and skills (Newell et al., 2002; Wagner & Newell, 2004), and different phases of the ES involve different players (Markus & Tanis, 2000). This diversity enhances the elaboration of perspectives and knowledge exchange (Homan et al., 2008). As stated in Freeman's (1984) "Principle of Who or What Really Counts", the first question in stakeholder analysis should be "Who are the stakeholders of the organization?" (Freeman, 1984; Mitchell et al., 1997; Pan, 2005; Rowley, 1997).

In addition, these stakeholders are not merely individual actors but are highly interdependent (Rowley, 1997) since no matter what one does, it impacts somebody else, and thus they can no longer afford to operate in silos (Jones & Price, 2001; Robey et al., 2002). Rather, they need to collaborate (Mitchell,

2006). For example, Saturn designers relied heavily on the knowledge of their employees (Kochan & Rubinstein, 2000) while Xerox shared blueprints with suppliers and involved them in designing parts (Jawahar & McLaughlin, 2001). Researchers even advocated cross-functional teams that include a mix of relevant internal and external parties (Davenport, 1998; Nah et al., 2001). The success of an ES project partly hinges on the effective collaboration of these stakeholders (Hitt et al., 2002).

Key stakeholders of ES implementations are top management, end-users, internal IS staff, and external parties, such as vendors or consultants (Aladwani, 2001; Coakes & Elliman, 1999; Hirt & Swanson, 2001; Light et al., 2001; Robey & Newman, 1996; Sabherwal & Robey, 1993) (see Table 3). The importance of diverse ES project stakeholders though, has largely been undermined in ES practice (Papazafeiropoulou et al., 2002), as recent ES studies merely focused on individual or selected stakeholders, such as users and IT staff (Pouloudi, 1999). For example, management may automate routine transactions without paying attention to the nature of the social network embedded in the transaction (Montazemi et al., 2008).

Several researchers also overly focused on internal stakeholder dynamics while neglecting external dependencies (Sawyer et al., 2010). Others focused on homogeneous agents in networks that were either underconnected across different types of stakeholders or overconnected within a type (Singh & Tan, 2010). Researchers thus called for more ES studies to refocus on people issues (Coakes & Elliman, 1999; Huang et al., 2003).

Table 3: Key Stakeholders of ES Implementations

Stakeholder	Characteristic
Top management	• They are traditionally associated with project management success (Robey et al., 2002; Wang et al., 2006) • Their support and buy-in are keys to effective implementation (Smith et al., 2010) • They focus on the business benefits and end results of ES projects (Adelakun & Jennex, 2002; Clarkson, 1995) • ES projects require their strong leadership and participation to align strategic and package goals (Sumner, 2000; Umble et al., 2003) • They possess power based on hierarchical authority and social status to ensure stakeholder buy-in and allocate resources (Schneider, 2002; Wang et al., 2006) • They may be supported by other staff who are delegated the authority (Serafeimidis & Smithson, 2003) • They promote new IS by communicating the organizational vision, and cultivating norms and values to shape staff perception and acceptance (Zhang & Faerman, 2007) • They alleviate potential IS-business misfits (Chen, 2010) • They ensure that no single stakeholder group dominates the project (Bose et al., 2008)
End-users	• They play a more significant role (He & King, 2008; Ko et al., 2005), such as in participative decision-making (Davis et al., 2009; He & King, 2008) • They have in-depth operational understanding of business processes (Ko et al., 2005; Soh & Sia, 2005) • They focus on the usability of the system and it's fit with their tasks (Adelakun & Jennex, 2002) • They are likely to be more responsible and empowered for system functionality and support services after ES project (He & King, 2008; Hirt & Swanson, 2001) • They partner external parties to better understand package-related issues (Kauffman & Tsai, 2009)
Internal IS staff	• There is less reliance on them (Light et al., 2001) due to their lack of ES package knowledge (Karimi et al., 2007b) • They are not instrumental in designing, building (Baskerville et al., 2000) or, sometimes, maintaining (Hirt & Swanson, 2001) the system • They focus on negotiating the suitability of ES packages between management and vendors (Howcroft & Light, 2002) • They interface ES with existing infrastructure and address local functional requirements (Adelakun & Jennex, 2002)

External parties	• They are subject matter experts hired to augment the company's skill base (Bose et al., 2008; McGinnis & Huang, 2007) • There is higher reliance on them by the firm due to ES package expertise (Baskerville et al., 2000) • ES projects may involve as many as a dozen or more external companies – including ES vendors, vendors of supporting hardware and consultants (Markus et al., 2000a) • There is bilateral dependency, as both organization and third-parties need the input of each other (Heiskanen et al., 1996)

2.2 Stakeholder Management

2.2.1 Overview Of Stakeholder Theory

The first formal definition of the stakeholder concept was given by the Stanford Research Institute in 1963 (Clarkson, 1995). "Stakeholderism" gained popularity after the publication of Freeman's (1984) 'Strategic Management: A Stakeholder Approach' (Polonsky, 1995; Rowley, 1997). Since then, numerous business and society scholars have developed and enhanced Freeman's work (Adelakun & Jennex, 2002; Rowley, 1997).

Stakeholder theory focuses on the actors in an environment (Key, 1999), and their relationships and social responsibilities with the environment (Brass et al., 1998). It clarifies which stakeholders are deserving of management attention, and whom organizations are responsible to (Key, 1999; Mitchell et al., 1997). In stakeholder thinking, success in satisfying multiple stakeholder interests rather than merely meeting conventional economic and financial criteria constitutes the ultimate test of corporate performance (Adelakun & Jennex, 2002; Donaldson & Preston, 1995). This theory thus advocates a wide-angled view of stakeholders rather than focusing on shareholders (Vinten, 2000).

Comprehensive stakeholder analysis extends beyond explaining stakeholder influences though, to how organizations respond to these influences (Rowley, 1997). Thus, stakeholder theory is also managerial in the broad sense that it does not simply describe existing situations, but it also recommends attitudes, structures and practices that, taken together, constitute stakeholder management (Donaldson & Preston, 1995).

Researchers suggested that most reasons for IS failure were related to humans rather than technical issues (Pan, 2005) so stakeholder relationship management became a focal point for business success (Walker & Marr, 2001). Even theoretical perspectives, such as that offered by the social construction of reality, advocated investigating actors' beliefs and attitudes (Reich & Benbasat, 2000). Likewise, from the 'Social Shaping of Technology' perspective, the design of technology is considered an outcome of social processes of negotiation between complex, heterogeneous networks of diverse stakeholders with different commitments or positions in the structure (Wang et al., 2006).

2.2.2 Individual Stakeholders

However, contextual specificity makes it difficult for all stakeholders' needs to be met with a standard organizational solution (Wagner & Newell, 2004). This is exacerbated in ES projects involving multiple stakeholders (Schneider, 2002). The first challenge is to ascertain what constitutes a stakeholder.

Narrow views of stakeholders are based on the practical reality of managers' limited resources, time and patience (Mitchell et al., 1997). Papazafeiropoulou et al. (2002) defined stakeholders as those with direct or indirect relationships with an IS. They could be classified as primary and secondary stakeholders (Clarkson, 1995; Key, 1999; Polonsky, 1995).

A broad definition includes any internal or external (Coakes & Elliman, 1999) individuals, groups of individuals, or subset of an identifiable group (Bots et al., 2000; Scott & Lane, 2000). Internal stakeholders include shareholders (Hill & Jones, 1992), managers (Robey & Newman, 1996; Smith, 2000), employees (Berman et al., 1999), and IT specialists (Robey & Newman, 1996). Externally, they include joint venture partners (Vinten, 2000), suppliers (Clarkson, 1995), and customers (Key, 1999).

Broad views of stakeholders are based on the reality that firms could be affected by, or could affect, almost anyone (Freeman, 1984; Sawyer et al., 2010). This study concurs that a broad definition is more appropriate to ensure that no relevant stakeholder is overlooked, especially given the multitude of stakeholders involved in ES projects. Hence, this paper adopts a modified version of Freeman's (1984) stakeholder definition as 'any group or individual who can affect or is affected by the implementation of an Enterprise System'.

Stakeholders though, have inherent differences (Agle et al., 1999; Light, 2005) in terms of agendas (Morris & Venkatesh, 2010), values (Jawahar & McLaughlin, 2001), perspectives (Boonstra et al., 2008), knowledge bases

(Hitt et al., 2002; Wasko & Faraj, 2005), motivation (Velcu, 2010), control of resources (Jawahar & McLaughlin, 2001), expertise (Aladwani, 2001), skills (Sawyer et al., 2010) and definition of success (Liang & Xue, 2004).

These differences may affect their salience to ES projects (Kochan & Rubinstein, 2000; Mitchell et al., 1997), interest, ability to contribute, commitment, and involvement in the project (Hirt & Swanson, 2001). However, no single attribute has been identified to reliably guide all identification of relevant stakeholders (Mitchell et al., 1997). Resolving and managing these diverse attributes can also be problematic (Davis et al., 2009).

However, regardless of their differences, stakeholder theorists advocate that there should be no prima facie priority of one set of interests over another (Adelakun & Jennex, 2002; Donaldson & Preston, 1995; Sykes et al., 2009). Ideally, firms should simultaneously address as many stakeholder interests as possible to lead to higher stakeholder satisfaction and better IS (Nambisan & Agarwal, 1998; Sawyer et al., 2010; Wang & Ramiller, 2009). Greater involvement increases their effective participation (Howard et al., 2003) and rate of acceptance (Bernroider & Koch, 2001) of the package and organizational direction. This helps firms to better cope with stakeholders with shared interests who form coalitions (Pan, 2005) or actively act to protect or enhance their interests (Frooman, 1999; Rowley & Moldoveanu, 2003). However, little research has been done on which stakeholder interests are crucial and how firms can address them (Berman et al., 1999).

In reality, it might not be possible to address the expectations of all stakeholders since they may have conflicting interests (Frooman, 1999; Newman & Noble, 1990; Polonsky, 1995). Moreover, if all their views were represented in person, the ES implementation process will become unwieldy and slow (Coakes & Elliman, 1999). Studies thus called for more evolved responses that balance or align their interests (Soh & Sia, 2005). For example, a cross-functional team (Akkermans & van Helden, 2002) has broader representation and composition to enhance its effectiveness (Nah et al., 2001).

As per Freeman's (1984) "Principle of Who or What Really Counts", the second question in stakeholder analysis should be "To whom do managers pay attention?" (Mitchell et al., 1997). Firms should prioritize their stakeholders based on certain criteria (Mitchell et al., 1997; Shankar et al., 2002) so more salient stakeholders can receive attention first (Agle et al., 1999). Stakeholder salience is defined here as the degree to which managers prioritize competing stakeholder claims (Agle et al., 1999). This can be achieved by applying sorting criteria in line with management's perception of which stakeholders are salient (Agle et al., 1999; Mitchell et al., 1997). This provides a simplified representation of the ES project environment (Wolfe & Putler, 2002). So, while stakeholder identification recognizes all possible stakeholders, stakeholder prioritization decides where to concentrate effort (Vinten, 2000).

However, there is no single universal characteristic that facilitates stakeholder prioritization (Mitchell et al., 1997). Also, while the issue of stakeholder prioritization has received some attention in general management literature

(Agle et al., 1999; Mitchell et al., 1997), research has been lacking on the unique criteria that should be employed during ES projects to categorize and prioritize stakeholder suggestions. In addition, while some headway was made in identifying and prioritizing stakeholder salience (Mitchell et al., 1997), little was done on what managers should do to address stakeholders' needs (Berman et al., 1999) or maximize their contributions (Nah et al., 2001). More research is thus needed to address calls by stakeholder theorists for effective stakeholder management to more closely align organizational and stakeholder needs (Key, 1999; Wolfe & Putler, 2002).

2.2.3 Identity Theory

One characteristic of interest in this study is stakeholder identity. Identity theories propose that actors are defined by identities, which is a polysemous concept that synthesizes individual and collective characteristics via a set of logically connected propositions, allowing individuals, groups and collectives to differentiate themselves from others in any given context (Flynn, 2005; Rowley & Moldoveanu, 2003).

Revival of interest in this concept was influenced by the development of social identity theory in social psychology (Hogg & Terry, 2000). This theory proposes that people gain a part of their identity from the groups to which they perceive themselves as having similarities (Cooper & Thatcher, 2010; Montazemi et al., 2008) and belonging (Kane, 2010). It has been applied to explain strategic group formation, organizational adaptation, and personal

networks (Rowley & Moldoveanu, 2003) but has yet to offer a convergent view on how people hold a particular representation (Salk & Shenkar, 2001).

A subtype of social identity theory is organizational identity theory (Foreman & Whetten, 2002). Organizational identity describes the set of beliefs about what is most core, enduring and distinctive about an organization (Voss et al., 2006), and explores individuals' identification with firms (Foreman & Whetten, 2002; Nag et al., 2007). Ashforth and Mael (1989) first empirically applied social identity theory to organizational psychology, but again, the question of how organizational identification occurs subsequently received little attention (Foreman & Whetten, 2002).

In general, a stakeholder's identity is based on their desire to differentiate themselves and be recognized in this way by the outside world (Rowley & Moldoveanu, 2003). It fulfils people's need for order, structure, simplification and predictability, and reduces subjective uncertainty about one's perceptions, attitudes, and one's self-concept within the social world (Hogg & Terry, 2000).

Stakeholders perceive things connected to their values as important (Agle et al., 1999) and they are likely to treat their group more favourably than other groups (Kane, 2010). Hence, the relative degree to which an identity is salient in a given context may affect one's behaviour (Ellemers et al., 2004; Frooman, 2003; Jawahar & McLaughlin, 2001; Nag et al., 2007) and involvement (Cooper & Thatcher, 2010; Fang & Neufeld, 2009; Hirt & Swanson, 2001) in that context. Stakeholder identity influences commitment (He et al., 2009;

Johnson & Yang, 2010) and knowledge transfer (He et al., 2009; Nag et al., 2007). It also leads to more interactions, larger stakeholder networks and greater trust, which further increases their willingness to share knowledge (McEvily et al., 2003). Moreover, it fosters a greater sense of unity, which engenders cooperation and contribution (Gu & Jarvenpaa, 2003).

Stakeholders, though, may have different identities (Flynn, 2005) based on their affiliation with an organization, work group or other categories which indicate an ordering of social reality and their position in it (Foreman & Whetten, 2002; Salk & Shenkar, 2001; Tajfel & Turner, 1985). The three more recognized identity orientations are personal, relational and collective (Cooper & Thatcher, 2010; DeRue & Ashford, 2010; Johnson & Yang, 2010) (see Table 4). Each is distinct, with unique frames of reference, social motivations and desires: the desire to enhance their own well-being, relationship partner's well-being, or group's well-being (Brickson, 2000; Flynn, 2005; Sluss & Ashforth, 2008). This identification process is dynamic (Brickson, 2000).

Table 4: Identity Orientations (Adopted from Brewer and Gardner, 1996)

Identity orientation	**Locus of self-definition**	**Basic social motivation**	**Relevant elements of self-knowledge**	**Self-evaluation frame of reference**
Personal	Individual	Self-interest	Traits	Interpersonal comparison
Relational	Interpersonal	Other's benefit	Roles	Comparison to role standard
Collective	Group	Collective welfare	Group prototype	Intergroup comparison

An actor may be motivated by self-interests and possess a personal identity orientation (Flynn, 2005; Johnson & Yang, 2010). This consists of the traits that we believe make us unique (Flynn, 2005; Polletta & Jasper, 2001). The individual uses interpersonal comparisons with other relevant individuals as a frame of reference (Brewer & Gardner, 1996; Brickson, 2000; Flynn, 2005). They act for their interests (Flynn, 2005) rather than the firm's interests in adopting ES (Brewer & Gardner, 1996).

Alternatively, stakeholders may define themselves as members of interpersonal relationships, thus reflecting a relational identity orientation (Flynn, 2005; Johnson & Yang, 2010). These identities are derived from dyadic relationships or memberships in small groups (Brewer & Gardner, 1996). Task interdependencies, interpersonal proximity and visible impact are greater in an immediate workgroup, thus facilitating greater interaction (Ashforth & Mael, 1989; Cooper & Thatcher, 2010). These individuals are motivated to procure mutual benefits for themselves and the other party in the relationship (Brewer & Gardner, 1996; Brickson, 2000; Flynn, 2005) based on relationships of trust (Ward et al., 2005). However, these subgroups may pose challenges at the organizational-level, such as by hindering inter-group information sharing (Homan et al., 2008).

Finally, defining the self as a member of a social group reflects a collective identity orientation (Flynn, 2005; Johnson & Yang, 2010). This transforms potential "we-they" categorizations into a "we" categorization (Homan et al., 2008). Studies suggest that firms should actively promote such a holistic

identity (Voss et al., 2006). It is internally motivated based on an individual's real and perceived cognitive, moral and emotional connection with a broader collective community (Ashforth & Mael, 1989; Polletta & Jasper, 2001). Identity construction is thus enacted through continuous participation in that community (Fang & Neufeld, 2009). It reflects their convergent beliefs about the central, enduring and distinctive attributes of the group (Hardy et al., 2005), and entails internalizing the firm's influence if it is congruent with the individual's value systems (Osei-Bryson et al., 2008).

Members characterize their self-worth as the extent to which they assimilate into the collective and how their group compares to other groups (Brewer & Gardner, 1996; Brickson, 2000). It fosters a positive identification with the welfare of others so others are seen as cognitive extensions of the self, rather than independent (Wendt, 1994). Consequently, members care very much about the identity of an exchange member when it comes to receiving affiliation resources (Wilson et al., 2010). This increases the perception of common fate and interdependence with a collectivity (McEvily et al., 2003). It facilitates a desire to proactively enhance the well-being and welfare of the group above all else (Brewer & Gardner, 1996; Brickson, 2000; Flynn, 2005; Ryu, 2005). However, collective identities are never simply the aggregate of individuals' identities (Polletta & Jasper, 2001).

In turn, collective identity increases commitment (Ashforth & Mael, 1989; Dutton et al., 1994; Voss et al., 2006) and solidarity (Rowley & Moldoveanu, 2003), strengthens organizational culture (Hardy et al., 2005), and enables

shared leadership (Carson et al., 2007). It enables the company to maximize the benefits of the diversity of their staff (Voss et al., 2006). Concurrently, it increases mutual understanding, which may lead to tighter alignment between the firm and their IT (Johnson & Lederer, 2010). Collective identification may even outline norms embedded in the collective culture that guide stakeholder interaction (Smith et al., 2010).

This may minimize possible indifference or deliberate resistance (Sabherwal & Elam, 1995), and enhance effective collaboration and willingness to contribute toward collective endeavours (Hardy et al., 2005; Levina, 2005; McEvily et al., 2003; Wasko & Faraj, 2005). For example, involvement in the Mississippi Freedom Summer Project reinforced affiliation with a social identity and subsequent activism, which allowed participants to strengthen their affiliation with the collective identity (McAdam, 1989; Rowley & Moldoveanu, 2003). However, there are few studies on managing multiple identities and the psychological mechanisms leading to collective identities (Polletta & Jasper, 2001), particularly for ES.

Managing stakeholder identities is complicated as actors have identity salience hierarchies where some identities are more salient in some social settings than others and this may trigger fluctuations in their primary identity (Ellemers et al., 2004; Pratt & Foreman, 2000; Sluss & Ashforth, 2008; Wendt, 1994). An actor's social identity may be an amalgam of links between several identities (Kreiner et al., 2006; Pratt & Foreman, 2000) that impose inconsistent demands or even conflict with their personal identity (Ashforth & Mael, 1989).

It is also challenging for companies to negotiate between multiple entities holding different identities (Voss et al., 2006). Understanding the interplay between these identities is therefore important.

Conflicting identities are not easily resolved by integrating disparate identities, as this could be cognitively taxing and compromise the utility of an identity in a particular setting (Ashforth & Mael, 1989). Rather, they need to be altered as additions to keep critical aspects of one's current self while affirming new possibilities (Fiol, 2002). For example, firms try to secure cooperative relations among departments by balancing loyalty to and identification with the sub-units and superordinate organization, and not overemphasizing one to the detriment of the other (Hogg & Terry, 2000; Sluss & Ashforth, 2008).

In addition, identities may change due to the development of shared understanding as social integration of stakeholders increase (Schneider, 2002) and actors learn more about each other, identify strongly with, and internalize others' needs and priorities (McEvily, 2003). They could also change because of switching group affiliation (Rowley & Moldoveanu, 2003) or social situations (Ellemers et al., 2004). Hence, there have been calls to consider the specific issues that trigger changes in identity orientation (Flynn, 2005).

2.2.4 Knowledge Management

Since organizations are often concerned with sources of critical resources to ensure continued survival (Jawahar & McLaughlin, 2001), the extent to which a stakeholder is deemed salient may also be due to the importance of the

resource they control, their degree of control over it, and the discretion they have over its allocation (Frooman, 1999; Jawahar & Mclaughlin, 2001; Mitchell et al., 1997). The more sensitive the resource is, the greater the potential for returns will be when sharing it with partners (Klein & Rai, 2009).

One such resource of interest in this study is stakeholder domain knowledge, as a firm can be considered to be a social community creating, sharing and transferring explicit and tacit knowledge (Chow & Chan, 2008). This knowledge includes the unique skills and information that can affect the ES project's outcome (Coff, 1999), where stakeholders with greater individual expertise could be more likely to contribute knowledge (Wasko & Faraj, 2005). Concurrently, organization-wide changes affect the training needs of departments, teams and other social groupings (Davis & Hikmet, 2008).

ES projects are knowledge intensive processes that require a wide range of different knowledge and skills (Davenport, 1998; Ko et al., 2005; Kræmmergaard & Rose, 2002) from many stakeholders (Ko et al., 2005; Soh & Sia, 2005; Wang et al., 2006). Studies claim that organizations whose staff learns from one another are more productive and competitive (Kane, 2010). Specifically, prior studies differentiated between internal business and technical knowledge, and external package knowledge during ES projects (Hitt et al., 2002; Nah et al., 2001).

This knowledge is dispersed across multiple internal and external stakeholders (Jones et al., 2006; Kearns & Sabherwal, 2006-07; Wang et al., 2006), as no

single person has all the knowledge required (Schneider, 2002). For example, typically internal stakeholders possess organizational knowledge (Aladwani, 2001; Light et al., 2001), while external stakeholders possess ES package knowledge (Gable et al., 2001; Hirt & Swanson, 2001).

Fostering the development of individuals' knowledge and skills (Davis & Hikmet, 2008) by gathering and sharing knowledge among implementation partners is thus important (Davis et al., 2009; Kearns & Sabherwal, 2006-07; McGinnis & Huang, 2007; Wang et al., 2006), as it elevates the stakeholder's salience to the project. This involves communication from a source so that it is learned and used by a recipient (Xu & Ma, 2008). This increases the firm's intellectual capital in the interests of its advantage (Montazemi et al., 2008).

Effective knowledge sharing offers numerous other benefits. It overcomes knowledge asymmetry, which may create knowledge barriers that inhibit adoption (Ko et al., 2005). Otherwise, for example, business and IS stakeholders may not understand each other (Serafeimidis & Smithson, 2003), or external vendors may not understand how internal stakeholders work and interact (Sabherwal & Elam, 1995). Such mutual understanding contributes to improved communication and decision-making (Johnson & Lederer, 2010).

It also boosts stakeholders' shared understanding of a topic (Reich & Benbasat, 2000) and expertise (Mitchell, 2006), which facilitates stakeholder interactions (Klein & Rai, 2009; Serafeimidis & Smithson, 2003). Consequently, stakeholders are better equipped to learn about the ES and apply their

knowledge (Ko et al., 2005). Greater understanding of impending changes may also lead to stronger belief in the change and a higher implementation success rate (He et al., 2009). In addition, it affects the social dimension of business-IT alignment (Chen, 2010).

Researchers have also emphasized the importance of the mechanisms to diffuse knowledge (Huang at al., 2003). Perhaps the most common mode of knowledge dissemination and an important driver of ES project success is formal training sessions (Akkermans & van Helden, 2002; Bruque et al., 2008; Velcu, 2010). More recent studies though, have reconsidered the pragmatism of not merely implementing a typical one-size-fits-all training program, but rather training sessions tailored to the needs of different groups to educate them on the ES, business processes behind the ES, and role of the ES in the firm (Davis & Hikmet, 2008; Devadoss & Pan, 2007; Stratman & Roth, 2002).

Another approach favored by firms to enhance knowledge transfer is on-the-job education or learning-by-doing (Sharma & Yetton, 2007; Wang & Ramiller, 2009). This involves learning of practice-based knowledge about ES embedded in the software that emerges during designing, coding, testing, using and supporting (Cha et al., 2008; Volkoff et al., 2004). Such self education may be bolstered via on-site support (Hirt & Swanson, 1999), such as help desks and online user manuals (Nah et al., 2001).

Yet another approach is to share tacit knowledge via social interactions (Nonaka, 1994; Ryu, 2005; Serafeimidis & Smithson, 2003; Van den Hooff &

Huysman, 2009). This could be done informally or formally, such as by enforced personnel movement (Bruque et al., 2008; Kane, 2010). While new knowledge may be developed by individuals, the interaction between them in teams and departments articulates and amplifies it (Davis & Hikmet, 2008). The stakeholder's learning is thus closely linked to their social context (Fang & Neufeld, 2009). Stakeholders may then embrace greater responsibility for helping each other thus saving cost (Hirt & Swanson, 1999), as situated learning may replace formal training so less knowledgeable members learn by listening to experienced members in a social context (Robey et al., 2002). This is bolstered if stakeholders share a superordinate social identity (Kane, 2010).

However, since total ES knowledge is dispersed throughout the firm and beyond (Yoo & Kanawattanachai, 2001), it may cause stakeholders of ES projects to remain largely ignorant of others' areas of specialization and needs (Kearns & Sabherwal, 2006-07). This can be challenging to manage. For example, firms may require guards or sentries to filter the flow of knowledge (Sawyer et al., 2010) to alleviate information overload but this could create unnecessary bottlenecks in knowledge sharing.

Moreover, the sharing of knowledge cannot be forced but should result from a shared intrinsic motivation to share (Van den Hooff & Huysman, 2009). Knowledge sharing though, can be taxing given stakeholders' varied characteristics, such as their backgrounds and interests (Ko et al., 2005), and the challenge of cultivating an environment in which they are willing to cooperate and learn (Ryu, 2005; Van den Hooff & Huysman, 2009; Wang et

al., 2006). Furthermore, many ES researchers focused on knowledge exchange between external parties and internal stakeholders (Ko et al., 2005; Liang & Xue, 2004; Wang et al., 2006), and issues such as merely transferring instructions without sharing underlying knowledge (Kearns & Sabherwal, 2006-07). While important, this minimizes focus on other aspects of knowledge sharing during ES projects, such as exchanges among internal stakeholders (Kearns & Sabherwal, 2006-07).

2.2.5 Stakeholder Power

The third characteristic of interest in this study is stakeholder power (Coakes & Elliman, 1999). Its central role in firm-stakeholder relations has been well documented (Welcomer et al., 2003) and it has been frequently used to investigate various aspects of IS implementation (Smith et al., 2010). However, there have been many disagreements as to the precise meaning of power (Krackhardt, 1990). Most definitions of power derive, at least in part, from the early Weberian idea that power is the probability that an actor within a social relationship would be in a position to carry out his own will despite resistance (Mitchell et al., 1997; Weber, 1947).

In general, power exists when one social actor, A, has access to coercive, utilitarian or normative means, to impose his will and get another social actor, B, to do something that B would not have otherwise done (Howard et al., 2003; Pfeffer, 1981; Roome & Wijen, 2006). This does not imply that an individual is 'conscious' of possessing power or, if conscious of possession, may choose to enact any implied behaviors (Mitchell et al., 1997). Studies though, noted

that power that is not exercised is insignificant, and influence is a materialization of power (Roomer & Wijen, 2006).

Resource dependence theory suggests that power accrues to those who control critical resources needed by the firm, which makes them more important to managers (Mitchell et al., 1997; Pfeffer, 1981; Solomon, 2001). Power has been situated in the relationship between firm and stakeholder, resulting in varying options for stakeholders, depending on the asymmetry of power in the firm-stakeholder relation (Frooman, 1999; Welcomer et al., 2003). Studies even explored the role of CEO perceptions of power, legitimacy and urgency, in affecting perceived stakeholder salience (Agle et al., 1999; Mitchell et al., 1997; Welcomer et al., 2003). Finally, studies verified that firms typically attend to issues championed by powerful stakeholders (Welcomer et al., 2003).

Generally, researchers suggested the need to better understand the allocation, amount and type of power among stakeholders, and how they are organized or structured (Krackhardt, 1990; Serafeimidis & Smithson, 2003). This is crucial because power affects stakeholder salience, which enables them to make diverse stakeholders cooperate for a common purpose (Mitchell et al., 1997). This understanding gives an edge in anticipating resistance and mobilizing support for action (Krackhardt, 1990), and fostering stronger stakeholder ties (Welcomer et al., 2003). Powerful actors may also affect core firm concerns (Boonstra et al., 2008; Welcomer et al., 2003), establish routines that affect the power of other stakeholders, and enhance learning type and effectiveness (Roomer & Wijen, 2006).

Companies can even limit negative efforts to threaten or disrupt organizational goals and operations by those with the power to reward or punish the company (Mitchell et al., 1997; Savage et al., 1991; Welcomer et al., 2003). It also enables the organization to better comply with powerful stakeholders' wishes (Salancik, 1979; Welcomer et al., 2003), such as by initiating formal mechanisms that acknowledge the importance of their relationship with the firm (Mitchell et al., 1997).

Studies also showed that power emanated from many sources (Krackhardt, 1990). They include leaders' formal institutionalized power (Krackhardt, 1990; Roome & Wijen, 2006; Schneider, 2002; Wang et al., 2006), authority delegated by management (Rau, 2004; Serafeimidis & Smithson, 2003), key stakeholder network positions (Krackhardt, 1990; Nambisan & Agarwal, 1998), possession of critical skills or knowledge (Jawahar & McLaughlin, 2001; Kochan & Rubinstein, 2000; Mitchell et al., 1997), an ascribed individual trait that reflected intangible qualities of trust and personal charm (Krackhardt, 1990), ownership of the system (Clarkson, 1995), and alignment with those who have greater power to impose their will (Mitchell et al., 1997).

Power is in a variable and not a steady state, which is one reason why it is transitory; it could be acquired as well as lost (Mitchell et al., 1997). Hence, simply identifying the most powerful actors in an organization or context may not help us to fully understand their salience in the stakeholder-manager relationship (Mitchell et al., 1997), as it may not provide sufficient

information to anticipate the overall dynamics of resistance and support for political acts (Krackhardt, 1990). Managing powerful stakeholders is further complicated as power may be located in multiple stakeholders rather than in the institutionalized managerial hierarchy (Solomon, 2001).

2.2.6 Stakeholder Relationships

Researchers and managers agree that virtually every aspect of a business is really about relationships (Walker & Marr, 2001). For example, within workgroups, different types of relationships develop between leaders and members (Wilson et al., 2010). Relational data may thus tell as much or more about how stakeholders interact, as actors' individual attributes will (Frooman, 1999; Montazemi et al., 2008). Individual data relates to the attributes and behaviors of agents that are regarded as the characteristics belonging to them as individuals, while relational data relates to the ties relating one stakeholder to another that cannot be classified as individual attributes because they only exist as part of a group of actors (Rowley, 1997).

Stakeholders potentially have direct relationships with many other stakeholders (Rowley, 1997), and may even be partners in a long-term relationship (Kauffman & Tsai, 2009). They exchange products, knowledge, information and expertise (Huang et al., 2003). Their opinions and actions often affect others (Robey et al., 2002; Sluss & Ashforth, 2008). Stakeholder relationships determine a stakeholder's influence on the project and how this in turn affects the actions of other stakeholders (Howard et al., 2003; Rowley & Moldoveanu, 2003). Hence, firms are not seen to respond to each

stakeholder individually, rather they respond to the interaction of multiple influences and concurrent demands from the entire stakeholder set (Jawahar & McLaughlin, 2001; Nambisan & Agarwal, 1998; Pan, 2005; Rowley, 1997).

Greater stakeholder interconnectivity increases acceptance (Bernroider & Koch, 2001), deepens mutual understanding (Mitchell, 2006; Karimi et al., 2007b), serves as a source of encouragement (Bruque et al., 2008), shapes perception of the final outcome (Newman & Sabherwal, 1989; Sambamurthy & Kirsch, 2000), improves stakeholder coordination (Kochan & Rubinstein, 2000), enhances knowledge sharing (Bruque et al., 2008; Chow & Chan, 2008; He et al., 2009; Karimi et al., 2007b), increases participation (Fang & Neufeld, 2009) and alleviates communication breakdowns (Jurison, 1999).

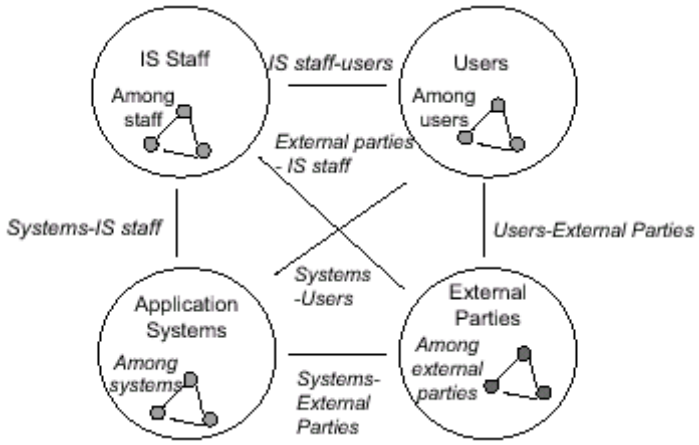
Stakeholders especially benefit from external network connections that provide access to new knowledge and skills that are not available internally (Wasko & Faraj, 2005). Consequently, during the last decade, the social network metaphor has been considerably extended to analyze behaviour where linkages in the network represent various types of relationships between firms (Chellappa & Saraf, 2010). The structuring of relationships also creates bases of power and control, affects stakeholders' ability to influence others, and augments access to knowledge (Sykes et al., 2009).

Walker and Marr (2001) proposed that successful stakeholder relationships passed through Four Gates of Engagement – Awareness, Knowledge, Admiration and Action. This applied to a general organizational context, and

considered a broad range of internal and external stakeholders, but mainly focused on the organization's direct relationship with each stakeholder.

Many studies thus focused only on individual or dyadic pairs of stakeholders (Cale & Eriksen, 1994; Nah et al., 2001; Rowley, 1997; Umble et al., 2003), while only a few models such as the extended relational foundations (ERF) model (Swanson & Beath, 1989), focused on the inter-relationships of three ES stakeholders (Hirt & Swanson, 2001) (see Figure 2). Less attention, however, was given to the inter-relationships of all four ES stakeholders.

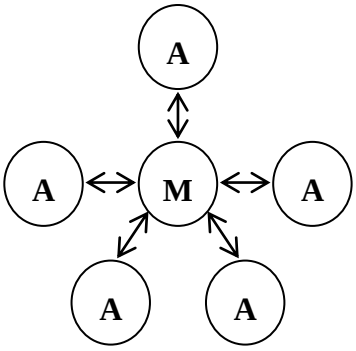
Figure 2: The Revised Extended Relational Foundations (ERF) Model



Studies identified two models of stakeholder interactions: the hub-and-spoke and stakeholder web models. In the hub-and-spoke model (see Figure 3), a firm is considered a nexus of contracts with managers at a central node with dyadic ties to each stakeholder (Agle et al., 1999; Freeman, 1984; Rowley, 1997; Wilson et al., 2010). This central position typically enhances his influence (Sykes et al., 2009). Although the leader's relationships with other stakeholders remain important (Schneider, 2002), critics note that ES

implementations do not consist of a vacuum of dyadic ties (Rowley, 1997), as each stakeholder may interact with multiple other stakeholders (Brass et al., 1998; Polonsky, 1995). Hence, this model fails to capture the ebb and flow of changes in inter-stakeholder relations, which are often multi-lateral and coalitional, and not bilateral and independent (Mitchell et al., 1997).

Figure 3: Hub-and-Spoke Model (with Manager in the Center)

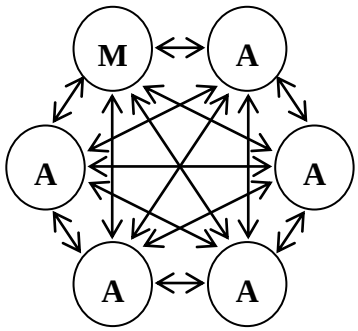


There is thus a need to move from privileged managerial monologues to multilateral stakeholder dialogues (Friedman & Miles, 2002), as shown in the stakeholder web model (see Figure 4), which exemplifies stakeholder interdependence (Donaldson & Preston, 1995), and the surrounding context of inter-relationships, which affect stakeholder influence (Rowley & Moldoveanu, 2003). This model facilitates understanding and management of these relationships (Pan, 2005). Social network theory supports using such analysis to study a set of linked individuals (Chellappa & Saraf, 2010).

Other stakeholder relationship attributes have also been studied. One attribute is the structural properties of stakeholder networks (Rowley, 1997), such as their local centrality (Nambisan & Agarwal, 1998) or density (Rowley & Moldoveanu, 2003). Local centrality refers to the number of ties a particular

actor in the network has with other nearby actors (Nambisan & Agarwal, 1998), and may vary for different stakeholders (Sykes et al., 2009).

Figure 4: Stakeholder Web Model



Density refers to the percentage of the total number of positive relationships that exist in a stakeholder network compared to the total number of possible ties if every network member was tied to every other member (Carson et al., 2007; Rowley & Moldoveanu, 2003), with greater density potentially making collective action relatively easier (Wasko & Faraj, 2005). Generally, the positions and relationships among actors in a social network play an important role in the network's efficiency (Chellappa & Saraf, 2010; Singh & Tan, 2010).

Another attribute is their relational characteristics (Borgatti & Cross, 2003). This includes their historical values and beliefs (Serafeimidis & Smithson, 2003), and whether they engaged in past actions and invested in establishing norms, trust and shared understandings (Rowley & Moldoveanue, 2003). It also covers their degree of self-management, nature of team membership (Schneider, 2002), level of trust and willingness to be vulnerable to the actions of others (Shankar et al., 2002), and degree of formal and informal

communications (Serafeimidis & Smithson, 2003). These contribute to the stakeholder's level of salience to the project (Jawahar & McLaughlin, 2001).

There is thus a need to better understand the structures and dimensions of stakeholder relationships (Jawahar & McLaughlin, 2001; Rowley, 1997), for example, using social network analysis techniques (Singh & Tan, 2010). Researchers even proposed that comprehensive stakeholder analysis should cover differences in both their individual attributes and inter-relationships (Friedman & Miles, 2002), since the firm is a network of stakeholders with different interdependent relationships (Bots et al., 2000; Donaldson & Preston, 1995; Rowley, 1997; Schneider, 2002). However, while several ES studies examined different stakeholders individually or in pairs (Cale & Eriksen, 1994; Nah et al., Umble et al., 2003), less attention was given to the concurrent study of the entire spectrum of stakeholders and their inter-relationships.

2.3 Facilitate OPS Fit

Given the heavy reliance on external parties due to the packaged nature of ES and the multitude of stakeholders that need to be managed during the course of an ES implementation, a big challenge plaguing companies is how to facilitate fit between organizational functionality, package features and stakeholder needs. Fit can be conceptualized as the degree to which the needs, demands, goals, objectives and/or structures of one component are consistent with those of another component (Oh & Pinsonneault, 2007). Fit or alignment is a regular top concern for IS managers and business executives (Morton & Hu, 2008; Nath, 1989; Reich & Benbasat, 2000; Seddon et al., 2010; Tallon, 2007/8)

since fit affects performance (Chen, 2010; Mathieson & Keil, 1998) and facilitating fit affects the adoption and successful outcome of IS projects (Cale & Eriksen, 1994; Hong & Kim, 2002; Johnson & Lederer, 2010; Light, 2005; Markus & Tanis, 2000; Somers & Nelson, 2003).

There are numerous studies on the antecedents of fit and its impact on organizational outcomes (Hong & Kim, 2002; Kearns & Sabherwal, 2006-07; Reich & Benbasat, 2000; Seddon et al., 2010). Studies explored the fit at the strategic, tactical and operational levels (Chen, 2010). Specifically, studies focused on fit between tools or aids and processes (Dishaw & Strong, 1999), structures and strategies (Chen, 2010; Slaughter et al., 2006; Tallon, 2007/8), and IS and the organizational environment (Mathieson & Keil, 1998).

In IS, the concept of fit may be traced back to studies of task-technology fit where fit was narrowly defined as the extent to which a particular task could be performed effectively and efficiently with a particular technology to enhance performance (Dishaw & Strong, 1999; Mathieson & Keil, 1998; Osei-Bryson et al., 2008). However, this definition of fit may be too narrow for ES studies, as ES facilitate a wider range of functionality across the organization and involve a multitude of diverse stakeholders.

Many early IS studies on fit focused on aligning IS and the firm at the strategic level (Reich & Benbasat, 2000; Slaughter et al., 2006). However, fit during ES implementation entails more than merely strategic issues. We may also draw parallels in the study of fit between organizational functionality and package

features, and the 'Social Learning' perspective of IS diffusion, which identifies two processes of diffusion: 'domestication', in which firms accommodate new IS by learning by doing, and 'innofusion', in which the IS is transformed as it diffused into the firm (Pollock et al., 2003). However, while this highlights the social aspect of fit, more insight is required on the role, impact and management of stakeholders in facilitating fit.

Researchers even proposed a classification scheme to ascertain whether an ES fits the firm based on its organizational structure (Morton & Hu, 2008). However, they stopped short of discussing exactly how misfit resolution could be facilitated. Finally, in the context of packaged systems, prior research mainly focused on aligning the capabilities of the external IS package and internal organizational needs (Dishaw & Strong, 1999), which does not take into account alignment among internal stakeholders.

This led to numerous studies on the antecedents of alignment and its impact on organizational outcome (Hong & Kim, 2002; Kearns & Sabherwal, 2006-07; Reich & Benbasat, 2002; Venkatraman, 1989), which led to calls for more comprehensive models of fit or alignment (Reich & Benbasat, 2000). Such models should explore what gaps in fit need to be addressed and their order of resolution (Hong & Kim, 2002).

Even ES vendors acknowledge the importance of functional fit with their packages so they develop a range of techniques to try and enhance this fit: configuring tables, changing program codes, developing industry-specific

versions, simplifying information retrieval and reporting, and using portal program to share access to multiple systems (Seddon et al., 2010). While prior research delved into the source of misfit (Soh & Sia, 2005) and factors affecting fit (Hong & Kim, 2002), future studies should continue to focus on the management of the facilitation of fit.

In a study of the issues affecting MIS alignment with business goals, 15 key factors were identified, of which, 12 were stakeholder-related (Nath, 1989). This suggests that effective stakeholder alignment is important to facilitate feature-function fit during the ES life cycle (Mitchell, 2006; Nah et al., 2001), as the selection of strategies to alleviate misfit is ultimately derived from interactions and negotiations among multiple stakeholders (Soh & Sia, 2005). Researchers also noted that companies should identify discrepancies between the package and users' needs early during implementation (Lucas et al., 1988).

In contrast, Wu et al. (2007) used the task-technology fit theory to highlight the need for greater OPS fit to ensure that the functionality available to users fit their activities thereby improving performance, but their study focused on broad enterprise-level requirements rather than individual stakeholder needs. Likewise, other studies investigated the social dimension of alignment and advocated the investigation of actors in organizations (Reich & Benbasat, 2000). However, many prior studies remained fixated on the alignment of the external package and organizational functionality (Kearns & Sabherwal, 2006-07), or the external package and user requirements (Light, 2005), with an

underlying assumption that user requirements and organizational functionality were generally aligned, which may not necessarily hold true at all times.

Studies thus call for more research on the fit between organizational tasks, external package and individual actors (Cale & Eriksen, 1994; Dishaw & Strong, 1999; Hong & Kim, 2002), and to address gaps in OPS fit to enhance positive performance impacts (Hong & Kim, 2002; Wu et al., 2007).

2.4 Contingency Theory of Leadership

2.4.1 Overview of Contingency Theory

Agency theory describes the firm as a nexus of contracts between stakeholders and managers, with managers holding a variety of positional resources and being responsible for reconciling divergent interests by making strategic decisions and allocating resources consistently across diverse stakeholder claims (Hill & Jones, 1992; Mitchell et al., 1997; Wilson et al., 2010). Thus, the challenge of managing OPS fit facilitation requires effective leadership. Hence, this study adopts the contingency theory of leadership as a lens to understand how managers facilitate OPS fit.

This theory differs from universalistic organization theories, as it argues that there is no one best way of achieving or managing fit (Birkinshaw et al., 2002; Donaldson, 2001; Teo & Kling, 1997). Instead, the optimum organization structure depends on contingency factors (Birkinshaw et al., 2002). While open systems analysis similarly emphasized the input of external environments

into organization structuring, this theory establishes functional relationships between environment and organizational variables (Lee et al., 1982).

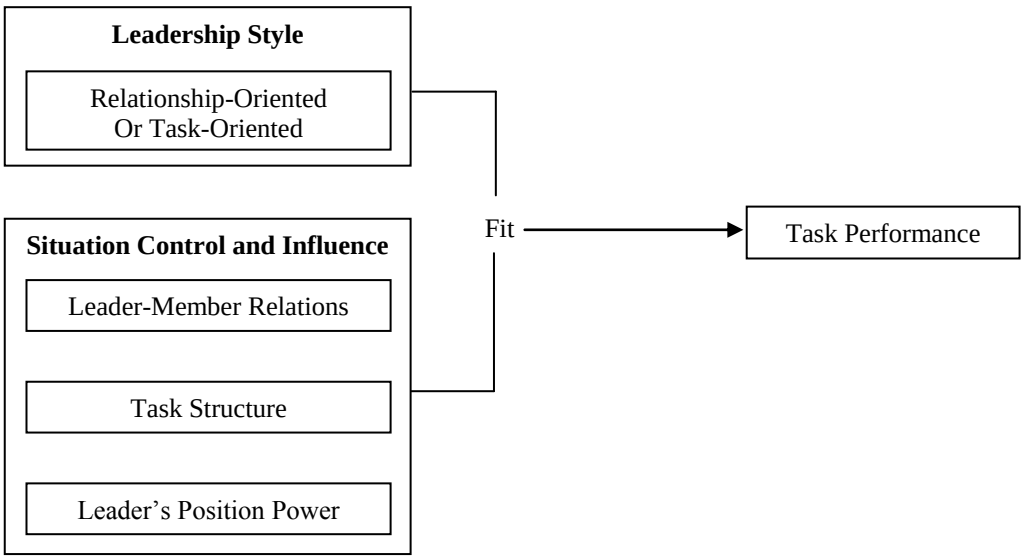
According to the contingency approach, at the most abstract level, the attainment of organizational performance is achieved via the effect of one variable, X, on another variable, Y, depending on some third moderating variable, W, with no bivariate relationship between X and Y that can be stated (Donaldson, 2001). More recently, there has been a shift in emphasis towards a so-called configurational approach in which superior performance is seen as a function of multiple interacting structural and contingency characteristics, rather than one or two primary contingencies (Birkinshaw et al., 2002).

The underlying logic of contingency theory is that the selection of appropriate organizational characteristics, such as its structure, must fit the contingencies that reflect the firm's situation to achieve higher performance, with a poor fit causing underperformance (Birkinshaw et al., 2002; Drazin & Van de Ven, 1985; Oh & Pinsonneault, 2007; Weill & Olson, 1989). A contingency is any variable that moderates or affects the strength of the effect of an organizational characteristic on organizational performance (Donaldson, 2001). This includes ownership, technology, resources, environmental uncertainty, knowledge, and environmental complexity (Birkinshaw et al., 2002; Donaldson, 2001; Lee et al. 1982). Each contingency theory specifies the structures that fit its contingency so the fits and misfits are unique to that theory (Donaldson, 2001).

2.4.2 Contingency Theory of Leadership

One of the first organizational structure theories to use the term contingency theory was a contribution to micro-Organizational Behaviour (Fiedler, 1967). Although Fiedler's (1967) initial view was called contingency theory due to the lack of research in this area at the time of his publication (Fiedler, 2005), it has since more accurately come to be known as the contingency theory of leadership (see Figure 5). The importance of this theory can partly be accrued to the fact that the quality of leadership is a key factor in determining the success and survival of groups and organizations (Fiedler & Garcia, 1987).

Figure 5: Contingency Theory of Leadership Model (Fiedler, 2005)



Studies reiterated the positive relationship between fit and performance in line with contingency theories (Donaldson, 2001; Drazin and Van de Ven, 1985; Mitchell et al., 1970). Chemers (2002) further noted that compared to leaders with a poor match, leaders with a good match between leadership orientation and situational characteristics performed more effectively, expressed greater

job satisfaction, reported less job stress, and described themselves as upbeat, confident and in control of the leadership situation (Fiedler, 2005).

Institutionalized hierarchical leadership, however, does not fully explain why some supervisors are not seen as leaders (DeRue & Ashford, 2010). The contingency theory of leadership thus addresses the question of why certain individuals perform better than others in identical leadership situations (Fiedler & Garcia, 1987). Structural theories explain how situations inhibit or promote effective decisions but do not explain why two leaders working under the same conditions may perform differently, as they do not consider personality and individual differences (Fiedler & Garcia, 1987). In contrast, this theory claims that the effective performance of interacting groups is contingent upon the appropriate matching of the individual leader's leadership styles and the favourability of the situation for that leader (Fiedler & Garcia, 1987; Mitchell et al., 1970; Utecht & Heier, 1976).

Performance, as it relates to leadership outcomes, can be measured in many ways, such as morale and job satisfaction, but several studies defined it as task performance since the main goal of workgroups and firms is to accomplish an assigned task (Fiedler & Garcia, 1987). Performance is thus defined here as the task of successfully facilitating OPS fit during an ES project.

Leadership style is defined as the constant underlying need-structure of the individual which motivates his behaviour (Utecht & Heier, 1976), which is his explicit actions, such as praise and structuring task, which may vary across

situations (Utecht & Heier, 1976). While leaders may adopt different actions to suit the situation (Zhang & Faerman, 2007), it is much harder for a leader to alter his inherent style and remain as effective. The theory thus advocates that leaders should engage in situational engineering (Fiedler, 2005) and identify their leadership style then modify their situational control to match their style (Fiedler & Garcia, 1987). This however may not be feasible for ES projects that affect the firm and many stakeholders, and are thus not so easily modified.

Situation control and influence moderates the correlation between performance and leadership style (Fiedler, 2005; Mitchell et al., 1970), such that a good match exists when the contingency variables positively affect the strength of the relation between leadership style and performance. It is a major determinant of leaders' behaviour, as studies showed that behaviour is determined more by the environment than personality (Fiedler & Garcia, 1987). Thus a leader's salience may vary in different process stages (Zhang & Faerman, 2007). According to the contingency theory of leadership, three situational variables affect whether a group situation is favourable to a leader: (1) leader-member relations, (2) task structure, and (3) the leader's position power (Fiedler, 2005; Mitchell et al., 1970; Utecht & Heier, 1976).

Leader-member relations refer to the amount of tension in the interpersonal relationships between a leader and members, and reflect members' acceptance of and loyalty to the leader (Fiedler, 2005; Utecht & Heier, 1976). Empirical evidence suggests that leader-member relations may be the most important component in situation control (Fiedler, 2005; Fiedler & Garcia, 1987; Utecht

& Heier, 1976). However, this variable does not consider relations among other stakeholders, which may affect the leader's influence on them (Mitchell et al., 1970). It also does not reflect changes in relationships over time (Fiedler & Garcia, 1987), which is pertinent as social interactions among leaders and members, and various contextual factors can cause leader and follower identities to shift over time (DeRue & Ashford, 2010).

The second component is the task structure. This refers to the extent to which goals, methods, standards of performance, rules and policies are clearly specified, and whether the job is done in a structured way or whether the way it is done and its requirements are unstructured (Fiedler, 2005; Fiedler & Garcia, 1987; Utecht & Heier, 1976). Concerns though, were raised as to the effectiveness of task structure in affecting leadership success, such as in a formal firm where structural rigidity is the norm (Utecht & Heier, 1976), as is the case for many organizations in Singapore.

The third component of situation control is position power, which incorporates legitimate authority, and the degree to which positive and negative sanctions are available to the leader, such that the position enables leaders to get group members to comply with and accept his leadership (Fiedler, 2005; Fiedler & Garcia, 1987; Utecht & Heier, 1976). The concept of power is intimately related to the concept of leadership (Fiedler & Garcia, 1987).

Several studies suggested other moderators, such as training, experience, leader's tenure, cultural heterogeneity and other task aspects to explain their

data thus raising the possibility that the theory is to some degree incomplete (Fiedler, 2005; Fiedler & Garcia, 1987; Mitchell et al., 1970). Another limitation of this theory is that it is something of a 'black box' as it does not immediately reveal the reasons for the relationships it describes and predicts (Fiedler, 2005) or the underlying processes that affect performance (Fiedler & Garcia, 1987). Finally, this theory was applied to groups that had a task to perform and required interaction among members (Fiedler, 2005) but its focus is on the leader's dyadic relationship with relevant stakeholders, and not the entire gamut of stakeholder inter-relationships.

2.5 Process Perspective

Most ES studies are based on static 'snapshots' of a cross-section of the implementation life cycle rather than the dynamic 'moving target' of alignment (Pollock et al., 2003; Tallon, 2007/8; Venkatraman, 1989; Weill & Olson, 1989). Even much of the prior literature on fit, particularly the issue of feature-function fit, focused on specific phases, such as the initial IT planning and identification of discrepancies between the package and firm's needs (Hong & Kim, 2002; Light, 2005; Lucas et al., 1988; Reich & Benbasat, 2000; Soh & Sia, 2005; Wang et al., 2006). Researchers though, proposed that adapting ES packages and organizational functionality is an ongoing process involving several phases (Hong & Kim, 2002; Morris & Venkatesh, 2010).

However, much of ES research focused on static critical success factors to explain variations in ES project outcomes (Esteves & Bohorquez, 2007; Liang & Xue, 2004). While insightful, this did not capture the temporal aspects of

the dynamic activities that occur during ES projects (Ko et al., 2005; Liang & Xue, 2004; Sabherwal & Robey, 1995), which are dynamic in nature, partly due to constantly changing business environments (He & King, 2008). Observing such patterns over time may be more useful than merely examining stakeholders at single points in time (Piderit, 2000) to predict ES project success because the ES experience life cycle is a process and not a mechanical connection between starting conditions and final results (Markus et al., 2000a). It also provides insight into how and where alignment creates value during the process (Tallon, 2007/8).

Studies highlighted how stakeholders in a process may change over time (Langley, 1999; Mackenzie, 2000). For example, there could be changes in stakeholders' power (Rowley & Moldoveanu, 2003), identity (Ellemers et al., 2004), behavior (Newman & Sabherwal, 1989), attitude (Boonstra et al., 2008), interests (Smith, 2000), and roles (Pouloudi, 1999). This causes their participation and involvement in different phases of the ES project to vary as well (Markus & Tanis, 2000; Newman & Noble, 1990; Newman & Sabherwal, 1989; Sambamurthy & Kirsch, 2000).

Several social network researchers even suggested that social networks were static over time (Perry-Smith & Shalley, 2003). However, studies showed that stakeholder inter-relationships may change during an ES project (Friendman & Miles, 2002; Newman & Noble, 1990; Pouloudi, 1999; Sambamurthy & Kirsch, 2000; Walker & Marr, 2001). Consequently, stakeholder theory advocated the need to manage dynamic stakeholder changes (Key, 1999)

starting from the outset of the project (Boonstra et al., 2008). Researchers though, feel that more studies are required on how and why stakeholders and their relationships change over time (Friedman & Miles, 2002).

Process theory differs from the more traditional variance theory, which is the standard methodological paradigm in the organization sciences (Mackenzie, 2000). Variance theory tests empirical associations between predictors and outcomes (Newman & Robey, 1992) but offers few insights into the subtleties and complexities of the process itself (Sambamurthy & Kirsch, 2000). In contrast, the process approach attempts to explain how outcomes develop over time (Xu & Ma, 2008). The value of process models is largely independent of a researcher's theoretical preferences (Robey & Newman, 1996) so they can contribute to constructing and testing theories, and integrating theoretical perspectives and topics (Mackenzie, 2000; Sabherwal & Robey, 1995).

This study defines a process as a sequence of events, where the emphasis is on facilitating an understanding of this sequence, thereby capturing the dynamics of ES projects (Newman & Sabherwal, 1989; Sabherwal & Robey, 1995). The basic element of process models is thus its sequence of events, which are instances of social action relating to the development process (Langley, 199; Newman & Robey, 1992; Sabherwal & Robey, 1995). An event could be a bad year, merger, task, decision, meeting, conversation or handshake (Sambamurthy & Kirsch, 2000).

However, not all events equally important (Newman & Robey, 1992) so there is a need to focus on the events that are critical to the trajectory of the process to provide a simplification of reality (Newman & Robey, 1992; Robey & Newman, 1996). These events are related (Newman & Noble, 1990) but their occurrence in calendar time is potentially misleading and less relevant than the sequence of occurrences relative to other events (Robey & Newman, 1996). Moreover, in process theories, the precursor is assumed insufficient to cause the outcome but is merely necessary for it to occur (Newman & Robey, 1992).

However, what are critical are not just the events but the underlying logic that give them meaning (Pettigrew, 1990). Process theories penetrate surface structures to understand the underlying logic behind temporal progression of events (Langley, 1999; Newman & Robey, 1992; Newman & Sabherwal, 1989; Pentland, 1999; Sambamurthy & Kirsch, 2000). This facilitates the identification and prediction of repeating patterns of events (Pentland, 1999). Thus, while researchers may be inclined to separately explore fit in each phase, a longitudinal study of fit may be more beneficial in tracing its effect throughout the ES implementation process (Wang et al., 2006).

While event-sequenced data are central to the process, they do not tell the whole story (Pentland, 1999). Instead, according to process theories, the people involved in a process provide the thread of continuity and meaning that ties the events together (Pentland, 1999). Much insight can be gained from a careful analysis of the same story from multiple, subjective points of view (Pentland, 1999). Process models also facilitate the analysis of relevant social

interactions that shape how stakeholders perceive the final outcome of the process (Newman & Sabherwal, 1989; Sambamurthy & Kirsch, 2000).

ES implementations, in particular, traverse several clearly defined sequential phases, characterized by different key players, activities and performance metrics (Markus & Tanis, 2000; Robey et al., 2002; Ward et al., 2005). ES research should thus analyze what happens in each phase of the ES life cycle (Liang & Xue, 2004). A common form of process research that can facilitate such an analysis is the stage model (Mackenzie, 2000). Stage models are special process models commonly used in IS research to specify a definite order to a sequence of events (Luo & Strong, 2004; Mackenzie, 2000; Sabherwal & Robey, 1995). They divide an implementation process into a priori stages or phases (Sabherwal & Robey, 1993), and assume that changes take place in the same order along the same path (Sabherwal et al., 2001).

Stage models, though, tend to be more descriptive than explanatory (Robey et al., 2002), and require a theoretical lens to maximize its usefulness. They also often strictly demand that the stages be followed in a specific temporal order, which may sacrifice potentially key information about the process (Sabherwal & Robey, 1995). Although this rigidity seems to counter the grounded theory approach of identifying relevant events in process theory, stage models are still useful for understanding an ES implementation process.

Numerous stage models (see Table 5) were proposed in IS and ES studies but the model by Pollock et al. (2003) was one of the few to focus on the

facilitation of feature-function fit during an ERP implementation. These stage models share several similarities. Each has a planning phase that entails selecting a suitable package and determining the project scope. They then enter a project phase to develop the system, such as via post-purchase tailoring. Finally, the system is rolled out and companies enter a maintenance phase to come to terms with the new ES and resume normal operations while managing the ES until the next major upgrade. Thus, for the sake of simplicity, this study describes the cases studied using a three-phase ES implementation stage model: (1) planning, (2) development, (3) post-implementation.

Table 5: Sample IS and ES Stage Models

Study	Model
Bancroft et al. (1998)	5-stage ES model – focus, as is, to be, construction and testing, and actual implementation
Esteves and Bohorquez (2007)	6-phase ES model – adoption decision, acquisition, implementation, use & maintenance, evolution, and retirement
Markus and Tanis (2000)	4-phase ES model – project chartering, the project, shakedown, and onward and upward
Newman and Sabherwal (1989)	4-stage IS model – project proposal, MIS design and development, MIS implementation, and MIS evaluation
Parr and Shanks (2000)	3-stage ES model – planning, project and enhancement – and the project phase was further divided into five sub-phases
Pollock et al. (2003)	5-phase ES model – highlight incommensurability, translate package, fit module to demands, develop system for generic user, move to organization-wide design
Ross and Vitale (2000)	5-phase ES model – design, implementation, stabilization, continuous improvement, and transformation
Sabherwal and Robey (1993)	7-phase IS model – suggestion, feasibility study, system analysis and design, programming, training, conversion and system installation

2.6 Putting It All Together

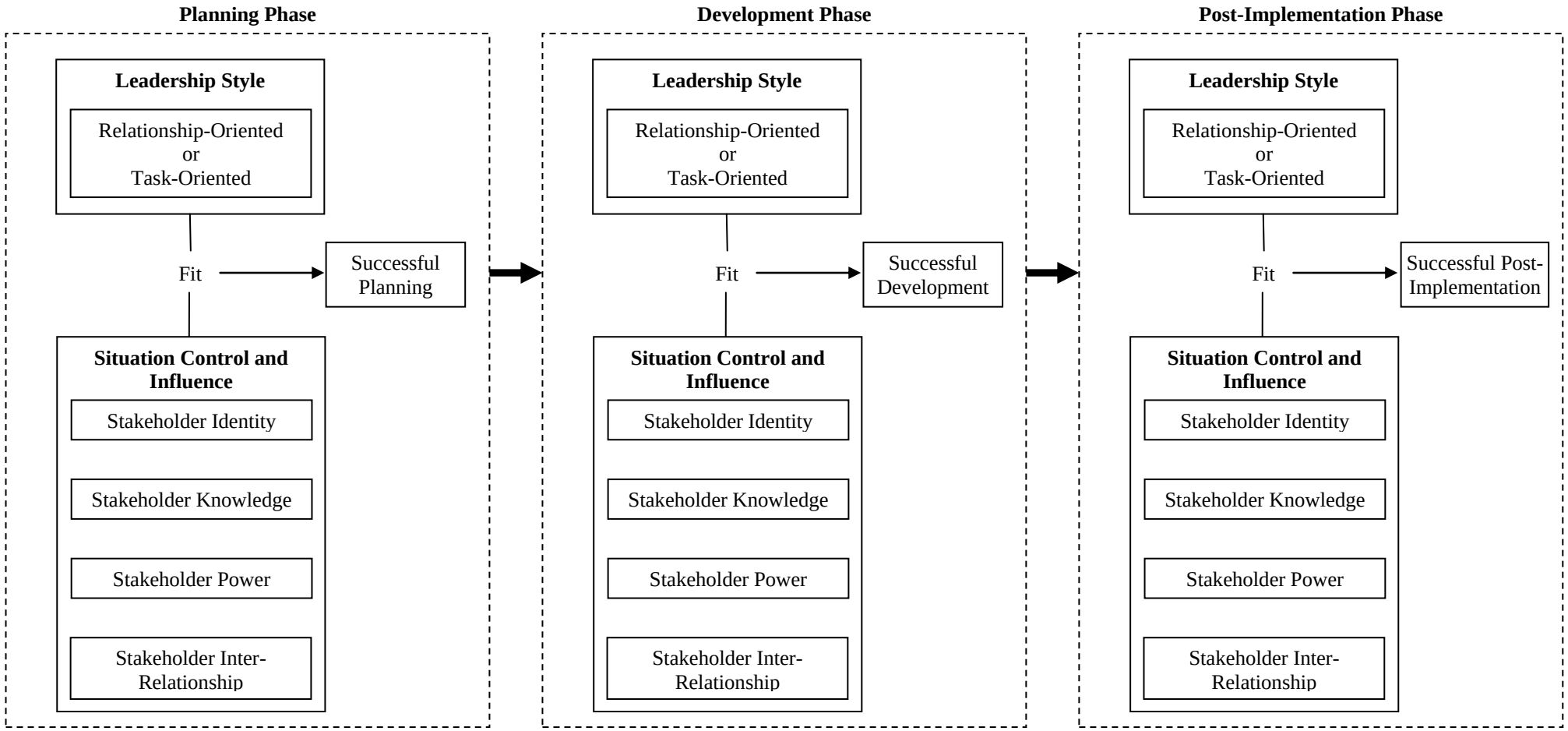
ES implementations are unique in two main ways. Firstly, ES packages are developed by external vendors (Davenport, 2000). Organizations then engage in post-purchase tailoring to ensure a better fit between the best practices

inherent in ES packages and organizational needs (Soh & Sia, 2005). Companies also have to manage their high dependence on external parties (Davenport, 2000) and the external parties' working relationship with internal staff. The second unique issue pertains to the multitude of stakeholders involved in ES projects (Akkermans & van Helden, 2002), specifically top management (Wang et al., 2006), users (Ko et al., 2005), internal IS staff (Light et al., 2001), and external vendors and consultants (Sumner, 2000). Concurrent management of these stakeholders is important since all of them are affected and can affect the ES project (Adelakun & Jennex, 2002).

These issues necessitate a closer fit between organizational functionality, external package features and multiple stakeholder needs (Dishaw & Strong, 1999). While the issue of feature-function fit has been separately addressed previously (Slaughter et al., 2006), the complexity of concurrently managing diverse stakeholders' needs has received less attention (Berman et al., 1999).

Stakeholder theory helps to address this gap in ES implementation research by providing insight on how to manage these multiple stakeholders (Key, 1999) so that their diverse interests are addressed (Donaldson & Preston, 1995). Three individual characteristics that warrant close attention due to their salience during ES projects are stakeholder identity (Flynn, 2005), knowledge (Soh & Sia, 2005), and power (Coakes & Elliman, 1999). Stakeholder management should also consider their inter-relationships (Friedman & Miles, 2002), since their actions often affect one another (Robey et al., 2002).

Figure 6: Three-Phased Stage Model of the Adapted Contingency Theory of Leadership Model (Adapted from Fiedler, 2005)



Managing the facilitation of OPS fit remains challenging. The contingency theory of leadership addresses this gap in ES implementation research by suggesting that situational control contingency variables may moderate the fit between leaders' leadership styles and the task of managing OPS fit (Fiedler, 2005). Managing the facilitation of OPS fit during ES projects is an ongoing process that involves a dynamic interplay of people and activities (Esteves & Bohorquez, 2007). Thus, this study incorporates a three-phased stage model – (1) planning, (2) development and (3) post-implementation – to describe and analyze the cases (see Figure 6).

3 Research Methodology

Defining research questions within the broad topic of OPS facilitation during an ES implementation is important for building theory from case studies, as it enables effective identification of the type of organization to study and kind of data to gather (Akkermans & van Helden, 2002; Eisenhardt, 1989). In this study, the research question of "how can OPS fit be managed in the implementation of Enterprise Systems" was examined. A multi-case interpretive case study approach was undertaken to study and compare between two ES implementations to glean insight into the challenge of facilitating OPS fit and address this research question.

3.1 Interpretive Case Study

IS research strategies can be classified as qualitative or quantitative (Myers, 1997) (see Appendix D). Quantitative methods are used to study natural phenomena in the natural sciences and include surveys, experiments and

mathematical modelling (Myers, 1997). Qualitative methods are used to study social and cultural phenomena in the social sciences and include physical artefacts, direct observations, participant observations, documents and archival records, and interviews (Myers, 1997; Yin, 2003). This study focused on interactive processes and events over time to construct the social reality behind OPS fit during ES projects. This better fit the qualitative approach instead of the quantitative approach, which measures objective facts, and focuses on statistical analysis (Gephart, 2004; Miles & Huberman, 1994; Neuman, 2003).

Since a key component of this study is stakeholders, it needs to describe them to understand how their social experiences are created and given meaning to develop a richer understanding of the motives that lead people to act in the ways they do and this also requires qualitative research (Cadili & Whitley, 2005; Denzin & Lincoln, 2000; Lee, 1992; Neuman, 2003). This was done by gathering subjective narrative descriptions, which further fit the qualitative approach rather than the quantitative approach, which relies more on objective statistics and figures (Lee, 1991; Lee, 1992). This is unlike quantitative research, which uses statistical equations to understand people's worlds, thereby freezing their social world in a structure of causality, which may neutralize the role of the human effect.

Qualitative research may use an interpretive, positivist or critical epistemology (Myers, 1997; Orlikowski & Baroudi, 1991). Typically, qualitative researchers use the interpretive approach while quantitative researchers use the positivist approach (Neuman, 2003). This study built on existing theories instead of

using a grounded theory approach since theories can be used as 'sensitizing devices' to view the world in a certain way (Glaser & Strauss, 1967; Klein & Myers, 1999; Newell et al., 2002; Walsham, 2001).

Interpretive research is especially useful for studying processes (Orlikowski & Baroudi, 1991) and socio-technical IS (Wagner & Newell, 2004). Interpretive studies seek to understand the phenomena through the meanings that people assign to them through their interactions (Klein & Myers, 1999; Newell et al., 2002; Pozzebon & Pinsonneault, 2005; Walsham, 1993) so we can interpret reality in terms of what it means to them and better appreciate what motivates their actions (Lee, 1991; Neuman, 2003; Orlikowski & Baroudi, 1991).

Interpretive research can be conducted via experiments, surveys, histories, analysis of archival information or case studies (Denzin & Lincoln, 2000; Yin, 2003) (see Appendix E). This study looked at how stakeholders are managed while facilitating OPS fit in ES projects. An experimental, historical or case study approach was suitable for "how" questions (Leonard-Barton, 1990; Yin, 2003). This study looked at stakeholders and ES project processes with little opportunity to exert control over these phenomena. The historical or case study approach was thus suitable (Benbasat et al., 1987; Yin, 2003). Finally, this study looked at the contemporary phenomenon of an ES project in a real-life context so the case study method was the most viable approach (Benbasat et al., 1987; Cadili & Whitley, 2005; Leonard-Barton, 1990; Yin, 2003).

The case study method is a widely used method in IS qualitative research (Orlikowski & Baroudi, 1991; Sheu et al., 2004) and the interpretive tradition (Pozzebon & Pinsonneault, 2005; Walsham, 1993). It provides rich insight into an explanation for a phenomenon (Benbasat et al., 1987; Grant, 2003; Lee, 1989; Miles and Huberman, 1994; Yin, 2003). Case studies are also suitable for IS research regarding organizational processes (Akkermans & van Helden, 2002; Galliers & Land, 1987). This method is not meant for hypothesis-testing (Leonard-Barton, 1990), but more for exploratory, descriptive or explanatory theory-building research (Akkermans & van Helden, 2002; Eisenhardt, 1989; Neuman, 2003; Yin, 2003). Exploratory research occurs when an issue is new. Descriptive research occurs when there is a developed idea and the focus is on painting a detailed picture of the situation. Explanatory research involves building on exploratory and descriptive research to identify the causes and reasons why something happens.

This study adopted an amalgam of exploratory and explanatory research. It looked at how the facilitation of OPS fit during an ES implementation process was operationalized and how relevant stakeholders were managed. This is in line with exploratory research since this area of research is still in its formative stages and not fully theoretically understood (Nah et al., 2001; Walsham, 1993). This study also aimed to understand why the facilitation of OPS fit during an ES implementation process was operationalized in this way and why the stakeholders were managed as such, which is in line with explanatory research that delves into the causes and reasons why something happens.

Case studies can be of a single-case or multiple-case design (Yin, 2003). Single case studies are more appropriate if it is a revelatory case of a previously inaccessible situation, a critical case that tests a well-formulated theory, a representatively typical case, or an extreme or unique case (Benbasat et al., 1987; Yin, 2003), while multiple cases usually yield more general research results (Benbasat et al., 1987). Although we sacrifice some richness with additional cases, the ability to compare phenomena across different contexts is enhanced (Robey et al., 2002). A multiple case study approach also yields more robust results (Benbasat et al., 1987; Nah et al., 2001; Yin, 2003), offer greater analytical leverage as the phenomena can be compared across cases (Eisenhardt, 1989; Robey et al., 2002), and reduces the possibility of coincidental associations (Benbasat et al., 1987; Eisenhardt, 1989) or that relevant evidence was not ascertained (Eisenhardt, 1989; Ward et al., 2005).

The number of cases and depth to which each case is studied is based on the richness of the data collected (Gephart, 2004) and data saturation point beyond which no further lessons are learnt despite additional data gathering (Glaser & Strauss, 1968). This study adopted a multiple-case design to facilitate data gathering and analysis from different situations, which was triangulated to uncover more robust findings in line with the research question.

3.2 Research Design

The next step was to identify a suitable unit of analysis, such as an individual, group, project, organization or event (Benbasat et al., 1987; Neuman, 2003). Since the focus of this study was on facilitating OPS fit during ES

implementations, the unit of analysis was an ES project (Benbasat et al., 1987; Neuman, 2003). Given the lack of research on the phenomena, this study required appropriate sites (Eisenhardt, 1989) that could fill the gap in prior literature on OPS fit facilitation during an ES project. Given the scope of the systems to be studied, the sites should have multi-tiered organizational hierarchy with several interacting departments representing distinct temporal zones that marked different social realities to provide stakeholders with diverse incentives and perspectives (Scott & Wagner, 2003).

In addition, the ES projects should involve multiple stakeholders with varied epistemic cultures (Wagner & Newell, 2004). Furthermore, since ES was an external package, consultants or vendors should be involved. To ensure the collection of fresh and detailed data about the ES implementation, the project should only recently have been completed. Finally, it was proposed that where possible, studies should focus on recognized industry leaders (Santhanam & Hartono, 2003). Thus, the sites should have recognizable pedigree. Two sites meeting these criteria were identified for this study (see Appendix F).

Republic Polytechnic (RP) implemented LEO, a learning and knowledge management system, which was deemed an enterprise-wide system, although this was a departure from typical ES such as ERP, CRM or SCM systems. As with most institutes of higher learning, RP illustrated the notion of temporal zones nicely (Scott & Wagner, 2003), due to the presence of multiple different departments and staff with diverse needs involved in the ES implementation. LEO was an external package that was heavily customized to fit the unique

needs of RP and its staff. Hence, it required the heavy involvement of an external vendor. While at the time of the study, it was about two years since the system was rolled out, most of the stakeholders involved in the LEO project were still in RP and many other staff had been exposed to the continuously evolving system for between three months to two years. Thus, sufficient retrospective and current data was collected to support the processual study (Newman & Sabherwal, 1989; Sabherwal & Robey, 1995). RP was a new institute but it had garnered a strong local pedigree based on its numerous accolades, partly due to its strong foundation, one pillar of which was related to the LEO system. The RP case was interesting, as the need for collaboration required in ES posed special problems in an institute of higher learning, which traditionally had fiefdom-like structures where IS tended to be developed separately to support values of academic freedom and scientific separateness rather than coordination and control (Wagner & Newell, 2005).

Singapore Power Services (SPS) implemented EBS based on SAP's Utilities Industry software, and applied it across the organization. SPS illustrated the notion of temporal zones (Scott & Wagner, 2003), as it had four key departments with varied roles, coupled with close working relationships with its parent company, Singapore Power, and numerous utility providers. EBS was an external package and the consultants played a big role in helping SPS implement EBS and ensuring it fit the needs of SPS and its staff. At the time of the study, it had been about six months since the system was rolled out so the implementation journey was still fresh in the minds of interviewees. Finally, SPS was a key agency in Singapore that catered to the needs of about

1.2 million customers and was a recognized leader in the industry and among government agencies for its use of IS.

3.3 Data Collection

Interviews were advocated as a primary source of data in interpretive research (Walsham, 1995). They allow for flexibility and depth, and enable interviewers to clear up misunderstandings through probing, ascertain lack of knowledge, detect ambiguity, achieve rapport, and make better estimates of respondents' true intentions, beliefs and attitudes (Verville & Halingten, 2002). Permission was obtained from interviewees to tape and transcribe the interviews to produce verbatim transcripts to facilitate data analysis (Scott & Wagner, 2003). Only one interviewee in the RP case declined and in his case, extensive notes were taken and transcribed immediately after the session. Subsequently, after the interviews, e-mails, IM conversations and tele-conversations were employed, where necessary, to clarify their comments.

In selecting interviewees, I adopted a purposeful sampling approach that moved from purposeful to theoretical (Corley & Gioia, 2004; Lincoln & Guba, 1985; Locke, 2001; Ravasi & Schultz, 2006). Initially, I chose informants who would be most able to provide rich and insightful information, such as the project manager and key top management. I then theoretically selected informants based on specific research interests.

In both cases, I used a snowballing technique of asking each informant for their recommendations as to who could best explicate what I sought to study

(Corley & Gioia, 2004). This was appropriate as professionals would nominate key respondents that had a consistent set of attributes appropriate for the study (Jones et al., 2006). In RP, I also learnt that their online staff directory was sorted according to seniority so I used it to identify a mix of junior and senior staff for interviews. This was done to check if interviewees differed based on the duration of their appointment in RP but no discernable bias was found.

Given the stakeholder focus of this study, having multiple diverse informants was important to get multiple subjective points of view of the phenomenon (Pentland, 1999; Wagner & Newell, 2004), especially since no single person may be the most reliable informant (Grant, 2003). This further increased the internal validity of the data collected (Eisenhardt & Graebner, 2007; Miles & Huberman, 1994; Ward et al., 2005; Yin, 2003). Moreover, it alleviated concerns of informant bias (Hirt & Swanson, 2001; Maxwell, 1996), as they were unlikely to engage in convergent retrospective sense-making (Eisenhardt & Graebner, 2007). This was also done to check if the data gathered differed based on their departments but no discernable bias was found.

This was supplemented by secondary data from internal documents, direct observation, newspapers, organization's website and online articles (Benbasat et al., 1987; Walsham, 2001). These multiple sources facilitated triangulation to increase the rigor of research (Klein & Myers, 1999; Yin, 2003) and validity of findings (Denzin, 1988; Newell et al., 2002; Pan et al., 2001; Sheu et al., 2004). Triangulation also verified, refined and strengthened my emerging categories (Eisenhardt, 1989; Glaser & Straus, 1967; Ravasi & Schultz, 2006).

To further enhance validity and reliability, a case study protocol was established prior to data collection (Jones et al., 2006; Yin, 2003). It included case study questions, data collection procedures and an outline of the proposed report. It was modified during the course of the study as new data was collected but its core was maintained as a guide to ensure that the study was on track. Then, during the second case in SPS, more specific questions were added to ensure that the data from both cases covered similar areas to allow cross-case comparisons (Lapointe & Rivard, 2005; Miles & Huberman, 1994).

A case study database was also employed during data collection to manage the large amount of data collected. It contained case study notes from the data collection, a reflexive journal of the researcher's observations and document analysis, and documents relevant to the case. Both the protocol and database enhanced reliability so other researchers could consistently conduct similar studies. Data collection concluded when redundant responses were evident and information reached theoretical saturation (Glaser & Straus, 1967; Kreiner et al., 2006; Pan et al., 2001), and efforts to get additional interviewees could not be justified in terms of the additional outlay of energy and resources (Lapointe & Rivard, 2005; Lincoln & Guba, 1985). For more information, please refer to the appendixes for the interview details from the case studies (see Appendix G) and background information of the interviewees from RP (see Appendix H) and SPS (see Appendix I).

3.4 Data Analysis

A detailed description of each case was written based on the three-phase ES project stage model – planning, development and post-implementation. This offered greater insight by enhancing familiarity with the case (Eisenhardt, 1989). The stories were not meant to tell "the truth" about the case but to tell "a truth", as interviewees' replies and actions were filtered through the lens of the researcher's subjectivity and ideas (Walsham, 2001). These write-ups were vetted by top management (i.e. Deputy Principal of RP and Managing Director of SPS) to ensure factual correctness and reinforce confidence in its construct validity (Lee, 1999; Ravasi & Schultz, 2006).

The data was then analyzed, not to find the interviewee who gave the answer closest to the 'truth' but to understand the processes and patterns seen in multiple interpretations (Scott & Wagner, 2003). This involved examining, categorizing, testing or otherwise recombining the data to address the initial research question (Yin, 2003). Efforts were made to ensure the coding process preserved existing relationships in the data (Miles & Huberman, 1994; Lapointe & Rivard, 2005).

The three-phased thematic process – recognizing an important theme, encoding it, and interpreting it (Boyatzis, 1998) – was used to code the data and systematically develop and refine interpretations into conceptual categories (Denzin & Lincoln, 2000; Neuman, 2003); (1) the data was analyzed line-by-line, (2) relevant sentences or points were noted, (3) links between corresponding points were made, and (4) themes were identified.

Data was also analyzed according to stakeholder groups and departments to identify potential interviewee biases but no discernable biases were found.

A codebook, which is an organized list of the codes used during the thematic analysis process (Boyatzis, 1998; Denzin & Lincoln, 2000), was used to further ensure consistency and enhance reliability. Constant comparisons were made between the data and themes to sharpen the constructs, as accumulated evidence from diverse sources converged on a single, well-defined construct (Eisenhardt, 1989). This was highly iterative (Lewis, 1998) to fine-tune categorization of the data, and subsequent naming and description of themes.

Comparing the data to prior literature, six themes were identified: organization functionality management, package features management, stakeholder knowledge management, stakeholder identity management, stakeholder power management, and stakeholder inter-relationship management. The terminology used to describe these themes was mapped to prior literature. Comparing data against extant literature strengthened the internal validity of the findings by providing insights into what the findings were similar to, what they contradicted and why (Eisenhardt, 1989). However, to remain true to the interpretive spirit of this study, a semi-grounded approach (Glaser & Strauss, 1968) was adopted to ensure greater flexibility in identifying themes that were not overly dictated by prior literature.

There was frequent overlap between data analysis and data collection to fine-tune data collection by enabling amendment and addition of questions to the

case study protocol and probing themes as they emerged (Eisenhardt, 1989). The thematic process was conducted several times during the study and themes identified were compared across all iterations to check for test-retest reliability and ensure consistency (Boyatzis, 1998). I also went back to previous interviewees where necessary to clarify or follow-up on their previous comments. The bulk of the analysis though still took place after all the data was collected (Taylor & Bogdan, 1984). Iterations between theory and data continued until saturation was reached where incremental improvement to theory was minimal (Eisenhardt, 1989).

Initially, within-case analysis enabled unique patterns of each case to emerge and provide a richer understanding of each case (Lapointe & Rivard, 2005). Separate case descriptions and thematic analysis were prepared for each case, and then cross-case analysis using analytic induction was conducted in search of common patterns and unique features (Lapointe & Rivard, 2005). Categories were selected to identify patterns in each framework dimension, and the cases were compared to find similarities and differences (Lapointe & Rivard, 2005). The chains of evidence developed in the within-case analyses helped explain each individual case while simultaneously taking into account differences between cases.

3.5 Research Rigor

As interest in interpretive research increases, researchers, reviewers and editors question how interpretive field research should be conducted and its quality could be assessed (Klein & Myers, 1999). While contributions to the

research methods stream in IS research led to a set of methodological principles for case studies that were consistent with the conventions of positivism, these positivist criteria are inappropriate for interpretive research (Benbasat et al., 1987; Klein & Myers, 1999; Lee, 1989; Yin, 2003) since the nature and purpose of interpretive research differs from positivist research (Orlikowski & Baroudi, 1991).

Interpretive research does not subscribe to the idea that a pre-defined set of criteria can be applied mechanistically, but it does not mean there are no standards at all by which interpretive research can be judged, since the absence of any criteria increases the risk that interpretive work will continue to be judged inappropriately (Klein & Myers, 1999). Hence, Klein and Myers (1999) offered a set of seven principles for the evaluation of case study research in interpretive field research.

In outlining their principles, Klein and Myers (1999) focused on the hermeneutic philosophers, especially Gadamer and Ricoeur. First, literature on interpretive philosophy comprised so many varied philosophical positions that it was difficult to yield one consistent set of principles for interpretive research. Hermeneutics, though, is a major branch of interpretive philosophy with Gadamer and Ricoeur arguably it's most prominent exponents so it made sense to focus on them. Second, hermeneutics had a fairly settled philosophical base which strengthened its appeal as a bridgehead for contributing to interpretive research methodology. However, these principles are not bureaucratic rules of conduct because their application still requires

considerable creative thought (Klein & Myers, 1999). Moreover, their use is not mandatory but rather, it is incumbent upon authors, reviewers and editors to exercise their judgement and discretion in deciding whether, how and which principles should be applied (Klein & Myers, 1999). These seven principles were systematically applied during the analysis of data and theory in this study (see Appendix J) (Klein & Myers, 1999; Teo et al., 2006).

3.5.1 The Fundamental Principles of the Hermeneutic Circle

This is the most fundamental principle of hermeneutics and is a meta-principle on which the other six principles expand (Klein & Myers, 1999). It suggests that we understand a complex whole from preconceptions about the meanings of its parts and inter-relationships by moving from an initial understanding of the parts to the whole and from a global understanding of the whole context back to an improved understanding of each part (Klein & Myers, 1999).

This was addressed in two ways in the case studies. During data collection, interviewees were provided with a copy of the broad interview questions in advance so they understood the direction of the study. Before the interviews, the researcher prepared by reading secondary data, such as from newspaper articles and websites, to get an overview of the organization and its ES. During the interview, both parties began with an initial understanding of the ES and study, and through their interaction, they moved towards shared meanings. Then, they moved from these shared meanings to adjust their initial mindset.

Next, during data analysis, the researcher separately analyzed each piece of data, such as the interview transcript, website article and archives, to identify key information and themes. Concurrently, the researcher had a broad idea of the research direction, as seen in the research question. The researcher moved from consolidating disparate pieces of data to form a holistic picture of the facilitation of OPS fit during the ES project, and from the holistic picture back to re-analyse the individual pieces of data to gain more insight. Eventually, a complete understanding of the facilitation of OPS fit during ES implementation was derived.

3.5.2 The Principle of Contextualization

There is an inevitable difference in understanding between the interpreter and author of a text due to the historical distance between them (Klein & Myers, 1999). Hence, a key task in IS interpretive research is to seek meaning in context (Klein & Myers, 1999). This principle requires that the subject matter be set in its social and historical context so that the intended audience can see how the current situation under investigation emerged (Klein & Myers, 1999).

While positivist researchers study how firms operated in the past, they presume that past patterns will be repeated in the future but ignore that people think, act and are active makes of their reality (Klein & Myers, 1999; Orlikowski & Baroudi, 1991). Interpretive researchers though, insist that any observable organizational patterns are constantly changing, as firms and relationships between firms, technology and people are dynamic (Klein & Myers, 1999). Thus, the results of their studies are influenced by the total

history of the firm and the research itself becomes a part of the firm's future history (Klein & Myers, 1999).

This was addressed in two ways in the case studies. First, before starting the study, the author thoroughly researched publicly available secondary documents, most notably newspaper reports, online articles and the organization's website, to understand the background of the organization and contextual factors that affected the ES implementation. Second, at the start of the case study, an interview was conducted with a key stakeholder in each organization. This interviewee provided a broad overview of the organizational context and motivation for the system, including information such as the key players and key moments during the project. This provided the researcher with the necessary background information to fine-tune the interview questions before embarking on the remaining interviews.

3.5.3 The Principle of Interaction between the Researchers and the Subjects

This principle requires the researcher to place himself and his subjects in a historical perspective (Klein & Myers, 1991). In social research, data is not just waiting to be gathered but rather, interpretivism suggests that the facts are produced as part of the social interaction of researchers with the participants so interpretive researchers must recognize that the participants, just as much as the researcher are interpreters and analysts (Klein & Myers, 1999). Participants are interpreters, as they alter their horizons by appropriating

concepts from researchers interacting with them, and they are analysts, as their actions are altered by their changed horizons (Klein & Myers, 1999).

This was addressed in two ways in the case studies. First, emailing the case study questions to interviewees in advance enabled them to modify their horizons accordingly before the interview. This was reinforced at the start of every interview, as the researcher outlined the motivation for the study. Second, the researcher elicited background information on the interviewee at the start of each interview to better understand their perspectives and fine-tune the interview approach, such as by focusing on specific areas that the interviewee may be best equip to answer or delving deeper into areas that the interviewee may be reluctant to talk about.

A point of caution is that this could cause interviewees to over-interpret what they know to fit what the researcher asks and simply tell the researcher what he wants to hear rather than what truly occurred or what the interviewee really felt. Hence, it would be prudent to avoid using many leading questions. The researcher could also couch questions in generalities and let the interviewee speak freely, and only use specific questions or terms for clarification.

3.5.4 The Principle of Abstraction and Generalization

Interpretive research values documenting unique circumstances and is suspicious of claims that human affairs are governed by culturally independent natural laws but there is a philosophical basis for abstraction and generalization in interpretive case studies (Klein & Myers, 1999). However,

this does not mean it is appropriate to test theory in a direct manner as in positivist case study research (Benbasat et al., 1987; Klein & Myers, 1999). Instead, theoretical abstractions and generalizations should be related to the case study data as they were collected by the researcher so readers can follow how the researcher arrived at his theoretical insights (Klein & Myers, 1999). Interpretive IS researchers also tend not to generalize to philosophically abstract categories but to social theories such as actor network theory (Klein & Myers, 1999). Also, the validity of the inferences drawn from one or more cases does not depend on the representativeness of cases in a statistical sense, but on the plausibility of the logical reasoning used in describing the case results and drawing conclusions (Lee, 1989; Walsham, 1993).

This was done in this study as the researcher drew from stakeholder theory, identity theory and contingency theory of leadership to discuss the facilitation of OPS fit during an ES implementation. The idiographic details revealed by data interpretation were then related to the general concepts drawn from these theories. This in turn led to the development of the conceptual frameworks of the facilitation of OPS fit during the ES implementations in both cases.

3.5.5 The Principles of Dialogical Reasoning

This principle requires the researcher to confront his preconceptions that guided the original research design with the data that emerges from the research process (Klein & Myers, 1999). Research design provides the lenses through which field data are documented and organized but research findings may not support these preconceptions so they may have to be modified or

abandoned (Klein & Myers, 1999). In positivist social science, pre-judgment is a source of bias and a hindrance to true knowledge but hermeneutics recognizes that prejudice is a necessary starting point of our understanding (Klein & Myers, 1999). Thus, this rule can be applied several times in sequence so improved understanding of one stage becomes the prejudice for the next (Klein & Myers, 1999).

This was reflected in the evolution of the research focus during this study. The researcher's initial focus offered some insight into the role of stakeholders during ES projects but was insufficient to fully explain the facilitation of OPS fit in this context during data analysis. Hence, more specific stakeholder issues were studied. In addition, the researcher's preconceptions about stakeholder theory and related issues were insufficient to answer the research question so the contingency theory of leadership was included to develop a more comprehensive framework. During this evolution process, the case study protocol was amended accordingly and applied in subsequent interviews. In some cases, the researcher contacted previous interviewees to clarify their prior comments based on the revised protocol.

3.5.6 The Principle of Multiple Interpretations

This principle requires the researcher to examine the influences that the social context has upon the actions under study by seeking out and documenting multiple viewpoints (Klein & Myers, 1999). The researcher can then confront potential contradictions in the multiple viewpoints and revise his understanding accordingly (Klein & Myers, 1999). Even if conflicting

interpretations are not present, this principle is of heuristic value because it leads to probing beneath the surface (Klein & Myers, 1999).

This was addressed in two ways in the case studies. First, the researcher gathered data from multiple sources so the subjective interpretations of interviewees were balanced against factual data from secondary sources, such as organizational documents, and newspaper and online articles. Second, the researcher interviewed as diverse a population of interviewees as possible, including internal and external actors, actors from different departments, and even actors with different tenures. Then, when faced with different interpretations, the researcher delved deeper to understand the discrepancy. This ensured factual accuracy and consistency among the different data sources to minimize the possibility of conflicting interpretations of what happened during the ES implementation process.

3.5.7 The Principle of Suspicion

The other six principles are more concerned with interpreting meanings than discovering false preconceptions (Klein & Myers, 1999). This principle notes that it is possible in certain circumstances to see consciousness as false consciousness (Klein & Myers, 1999; Ricoeur, 1976). This approach goes beyond understanding the meaning of the data, to read the social world behind the words of the actors (Klein & Myers, 1999). Critical social theory pursues this idea more vigorously than interpretivism so it is unsurprising that examples of interpretive field studies implementing the principle of suspicion tend to be influenced by the writings of critical theorists (Klein & Myers,

1999). Since this study does not adopt a critical stance, this principle is of less importance than the others.

However, while this is not a critical study, the researcher did indirectly exercise this principle during efforts to enhance the rigor of the study. The author eschewed from limiting data collection to interviews and gathered factual data from secondary sources as well. Then, after preparing the case description, a copy was sent to a key top management staff in each organization to review the factual accuracy of the data collected. This helped to ensure that the researcher was accurate in his reading of the social world behind the words of the interviewees.

3.6 Personal Reflections on Conducting Fieldwork

Interpretive research is useful for studying processes, with the case study method being widely used in IS qualitative research (Orlikowski & Baroudi, 1991; Sheu et al., 2004). Many books (Boyatzis, 1998; Yin, 2003) and articles (Eisenhardt, 1989; Walsham, 2006) provide insight on how to conduct such research but reflections on researchers' personal experiences require further articulation (Walsham, 2006). This section offers the researcher's personal reflections in conducting fieldwork for the two cases. While these experiences may be context-specific, they may still contribute some valuable insight for other researchers who seek more practical advice on how to conduct case study fieldwork. This reflective account is presented in the first person to better portray the researcher's personal thoughts and experiences. Key insights

are categorized according to the three phases of fieldwork: entering the field, in the field, exiting the field.

3.6.1 Entering the Field

3.6.1.1 Balancing Theories and Past Case Study Data

Unlike grounded theory, researchers can build on existing theories in interpretive research by using prior theories as a sensitizing device to study the case (Klein & Myers, 1999). The theories help as an initial guide for scoping the study and collecting data (Walsham, 2006). While this process is commonly acknowledged, its value prior to conducting a case study should be emphasized, especially for a multi-case study. In the case of RP, prior literature helped me develop a broad research lens to study the case, as I was still deciding what theories to use and what issues to focus on. Hence, the data gathered was broader and some of it, while useful for various publications, was found to be less relevant to this thesis. Prior to the SPS case, I balanced my theoretical readings against the data collected from the RP case to provide a more focused lens for the SPS case study, which led to more in-depth and pertinent data. This reinforces the argument that researchers should try to develop their theoretical lens across multiple cases rather than merely apply it to a single case, as the latter may result in a less in-depth study.

3.6.1.2 Conducting Background Research Prior to Study

Each case has its own context and perspective, and a screening process prior to the case study is advocated to help decide whether the case meets the researcher's pre-established criteria (Yin, 2003). To facilitate this process, I

gathered materials from the company's website and Internet for articles about the company and ES. In the case of SPS, I also obtained copies of various project documents. One concern is that researchers should avoid allowing the screening process to become too extensive or expensive (Yin, 2003). Hence, I clearly identified the sources of data I would initially focus on, although in the SPS case, information on the prior CMS project was sparse so I remained flexible to broaden my search parameters. I also outlined the basic information I needed to start the case study and arranged for interviews once this information was gathered, while I continued to gather secondary data for the case study proper. This screening process helped me to better understand the organizational background and terminology so I could better scope my study, interview questions and list of interviewees. For example, in the RP case, the company website had profiles of all the staff so I learnt about their background in advance. Then, during the interview, I used this information to set the interviewees at ease and connect with them to encourage them to talk.

3.6.1.3 Clarifying Flexible Project Scope

At the start of a case study, it is important that the researcher and organization clearly outline the scope of the project and expected deliverables. Organizations generally respond well to offers of feedback such as a formal report after the study (Walsham, 2006). Part of this process involves addressing issues such as interviewee and organizational confidentiality (Walsham, 2006). In both cases, a case study proposal was sent to key management staff before the study. This proposal outlined how the study would be conducted and what I hoped to get from it, such as the number of

interviewees, type of interviewees, secondary data desired, duration of study, and permission for publications. It also outlined the deliverables to the company such as a formal report for factual verification. This minimizes possible disputes during the case and after it is completed. In addition, based on my experiences and what I learnt from other researchers, I left room for flexibility in the proposal. For example, in SPS, I initially suggested interviewing about 10-15 people with the caveat that I would discuss with them if I needed more, and eventually, I interviewed 18 people.

3.6.1.4 Establishing Close Gatekeeper Relationship

It is important for researchers to identify who are their key gatekeepers for the study (Cassell & Symon, 2004), and establish a collaborative partnership with them rather than merely a researcher-subject relationship (Taylor & Bogdan, 1984). I had mixed success with gatekeepers. In RP, the gatekeeper was a high-level Director. He proved to be too high-levelled to liaise with interviewees and gather secondary documents. Thus, I identified other key people (Cassell & Symon, 2004) in RP and went through my gatekeeper to get one of them, the Deputy Principal, to formally approve my project via email. I then used this email confirmation to personally approach and arrange my own interviews. While this was more tedious, it offered me greater flexibility in terms of deciding how many people and who I could interview. In contrast, in the SPS case, the SPS MD formally appointed a staff member as our gatekeeper, and very clearly outlined her role during our kick-off meeting. Subsequently, she was a great help in scheduling interviews around the busy schedules of staff and providing secondary documents. However, this posed a

limitation as she more rigidly followed the initial number of interviewees I requested during kick-off so I could only interview a few extra staff. Also, she was more protective of the interviewees' schedules so I ended up with more multi-interviewee group sessions.

3.6.2 In the Field

3.6.2.1 Interviewing Diverse Sample Population

Interviewing multiple different stakeholders limits informant bias (Maxwell, 1996) thus increasing the internal validity of the data collected (Miles and Huberman, 1994). However, when studying an ES project, there are numerous stakeholders that may affect or be affected by the system. The challenge I faced was thus how to identify a sample population that covered all major stakeholder groups without being too overwhelming. Based on the background research, kick-off meeting and first one to two interviews, I created a stakeholder web with a rough idea of how the stakeholders were involved during the project but I could not find a single person with in-depth knowledge about all aspects of the case. Then, based on my research objectives, I traversed this web to identify the stakeholders and decide what information I needed from them. For example, in the RP case, I spoke to top management, internal IT, academic and external IT staff. I also interviewed several people from each of a few different departments to check for potential differences in terms of how they were involved in developing and using the system. This though led to another challenge, as I had to modify my approach and interview questions to fit the people I interviewed. For example, I used technical terms when speaking to IT staff but relied on layman terms for end-users.

3.6.2.2 Moderating Interviewees' Answers

One challenge I faced was in moderating the answers I received from interviewees. This is a basic challenge for new researchers as they need to develop good social skills, such as learning to sacrifice precious interview time to allow nervous interviewees to talk freely initially to quell their nervousness (Walsham, 2006). I was actually more confident with interviewees who were more reluctant to speak. I would try to read their body language and employ tactics such as making good eye contact to show my interest in what they had to say, making reference to their background to create a personal connection, asking for clarification and examples so they spoke more, and knowing when to delve deeper and when to change topics if an interviewee appeared nervous or impatient. I even accommodated requests for interview locations, such as in the office, meeting room, cafeteria or pub, so they were in a comfortable environment. My personal challenge was more in dealing with interviewees with a lot to say, as I was worried that cutting them off could be perceived as being rude and cause them to keep quiet. I had to learn how to let them speak to make them comfortable and able to articulate difficult issues, before bringing them back on point if they went off tangent or if time was running short and there were still other issues I wanted to cover.

3.6.2.3 Compromising between Richness and Comparability in Multi-Case Study

Typically, there may be a need to compromise between richness of detail and ability to compare phenomena when conducting additional cases (Eisenhardt,

1989; Robey et al., 2002). I noted that this was generally the case for subsequent cases rather than the first case. In the RP case, I had the luxury of exploring a range of different issues for a rich, multi-faceted study. However, after analyzing the case and fine-tuning my research lens, I became more focused during the SPS case to ensure a closer fit with the RP case data to enhance comparability, which resulted in a more in-depth albeit less multi-faceted study. I also faced a challenge in enhancing the comparability of the two cases. For example, during the SPS case, I initially focused more on issues identified from the RP case to confirm or refute what I had learnt. However, this led to the concern that I may miss out on issues I had not initially picked up from my RP study so I relaxed my interview strategy to explore other issues in the SPS case. It was through this approach that I ended up incorporating the Contingency Theory of Leadership into my study, which I had not initially identified as being pertinent in my RP case analysis.

3.6.2.4 Maintaining Flexibility in Case Study Protocol

A striking feature of research to build theory from case studies is the frequent overlap of data analysis with data collection (Eisenhardt, 1989). During the study, the researcher should take notes of their impressions, and ask questions such as, "What am I learning?" and "How does this case differ from the last?", and where necessary, add or alter their data collection method (Eisenhardt, 1989). In both cases, I started with a case study protocol and the issues I wanted to explore. However, during interviews, I remained flexible in exploring other interesting issues that the interviewee mentioned. Some may be informative but irrelevant to my study but once in awhile, I found an

interesting issue or example that warranted further exploration. For example, in the RP case, one interviewee expressed his displeasure over an incident that I realized exemplified top management's management of their ES. So, I included this issue in subsequent interviews, and even backtracked to previous interviewees for their reflections on the incident. However, in the RP case, I had more luxury in analyzing case data in-between interviews to modify my protocol as necessary, but due to time constraints, I had less opportunity to do likewise in the SPS case.

3.6.2.5 Collaborating with another Researcher

One unique experience I had during the SPS case study was the opportunity to work with another researcher, Dr. Teoh Say Yen. While converging observations from multiple investigators enhances confidence in the findings (Eisenhardt, 1989), there was the risk of discrepancies that had to be resolved through mutual agreement (Ravasi & Schultz, 2006). The first challenge was in coming up with consolidated interview questions that incorporated our slightly different research interests without making the interview too disjointed. We achieved this by sitting down to discuss our research areas and what each of us hoped to take away from the study. We also took awhile to balance our different styles and settle into a rhythm during interviews. For example, in one early interview, the interviewee was rather quiet so Dr. Teoh employed more social tactics to joke with them while I asked more probing questions. We also had to balance our schedules since Dr. Teoh was only in Singapore for slightly more than a month while I was teaching. Luckily, our gatekeeper could fit our interviews within that time frame but it left little opportunity to fine-tune our

questions in-between interviews. Despite the rush, we remained in constant communication during the study to compare notes about interviewees, issues we could explore and resources we needed.

3.6.3 Exiting the Field

3.6.3.1 Maintaining a Good Relationship

Properly completing the case study relationship can be important for the researcher and informants, such as by reminding the key liaison person about the researcher's plans and time frame for analyzing and writing up the case study (Cassell & Symon, 2004). I was often reminded that conducting a case study hinged a lot on good social relationships, perhaps none more so than upon exiting the field. Thus, where possible after each interview, I passed interviewees my name card and asked for their name cards or contact information. I sought permission to contact them at a later date if necessary. Finally, I thanked everyone for their valuable time and assistance in the study. This helped to ensure that organizational staff maintained a good final impression of you and your work, so it was easier to approach them later for clarification, assistance for more information or resources, or even permission to re-visit the organization. I also maintained close contact with my key contact in the organization to update them on my progress in writing the case study report and get them to factually verify its contents so I could more freely analyze the data and prepare publications. However, I realized that if contact lapsed for too long a period, it becomes harder to re-visit the site regardless of the rapport previously developed. For example, in the RP case, I thought about re-visiting the site a year later to see how they had progressed but a year of

non-contact meant the Deputy Principal was lukewarm about the idea and it eventually fell through.

4 Description of Cases

4.1 Case Description: Republic Polytechnic's LEO Implementation

4.1.1 Background

RP was established on 1 August 2002 and had to set up their curriculum and infrastructure before accepting their first students in July 2003. RP's mission is *"To be an institution of excellence in problem-based learning in partnership with industry, embracing the holistic development and career preparation of the individual"* and vision is to *"Nurture innovation, professional competency and entrepreneurial learning."* RP initially consisted of three schools (School of Information & Communications Technology (SIT), School of Applied Science (SAS), School of Engineering (SEG)) and three centres (Centre for Culture and Communication (CCC), Centre for Educational Development (CED), Centre for Innovation and Enterprise (CIE)). It later added the School of Technology for the Arts (STA), Centre for Professional Development (CPD) and Centre for Science and Mathematics (CSM). Other key departments included the Office of Academic Affairs (OAA) that oversaw the curriculum and Office of Information Services (OIS) that oversaw RP's IT infrastructure.

There were two top management driven foundational pillars in RP: the Problem-Based Learning (PBL) educational pedagogy, and their synchronous and asynchronous IT-supported learning environment. As noted by a RP staff, "*When we first started, I think the direction came from the higher management.*

They wanted a certain kind of culture." This led to the innovative application of an enterprise-wide e-learning system, Learning Environment Online (LEO). As a top management staff noted, "*What we are doing here is the world that is before us. I mean, not to do it is going against the height of technology. We have no choice. It's just a question of when we do it."* This sentiment was reinforced by the Principal of RP in their 2004 Annual Report, "*Not only is technology central to our campus, administration and learning, it is a way of life at RP."*

About 90% of staff and students from across all the schools and centers in RP use LEO on a daily basis. As proclaimed in RP's 2004 Annual Report, "*LEO is the hub of all teaching, learning and student administration processes. LEO provides a total online suite of everyday transactions used by staff and students, including time-tabling, class assignments, discussion forums, quizzes, grading and surveys ... On average, LEO achieves over two million hits a day, with 113 e-applications supporting a population of some 2000 students."*

RP's success was evident from their various accolades. On November 2003, RP received certification for ISO 9001 (Quality), ISO 14001 (Environment), and OHSAS 18001 (Occupational, Safety/Health). As noted in their 2004 Annual Report, *"RP was the first polytechnic to receive all three awards within the first year of its operations."* Also, on 19 November 2003, RP received the People Developer Standard (PDS) from the Singapore People Excellence Award Council.

The subsequent sections will describe the journey that RP embarked on during the implementation of LEO to facilitate the fit between RP requirements, LEO package features and the requirements of RP's diverse stakeholders.

4.1.2 Planning Phase

4.1.2.1 Laying Organizational Foundation

RP's organizational foundation was laid by their management team. Under the auspices of the Principal, they outlined RP's core values and direction in line with the culture they envisioned for RP. As a RP IT staff elaborated, "*But of course the direction needs to be clear first. ... As long as this is clear, at our level, we know what we should do. We shouldn't go against this culture and this direction."*

Although the two pillars of RP – PBL pedagogy and pervasive use of IT – were developed in parallel, the core focus of RP was in defining their educational pedagogy based on their PBL educational methodology. At this juncture, this step was largely divorced from deciding what technology to use. As a top management staff stated, "*For us, the key for everything was getting first the education right. ... Everything else was actually introduced to get the education system right."*

The OAA Director oversaw this process. He was instrumental in single-handedly shaping the PBL methodology and curriculum, and embedding RP's values in them. As the OAA Director exclaimed, "*From my position as an individual, honestly my one loyalty is the education system running well. I*

have no loyalty to persons. I don't care whether anybody gets angry or happy about it. I only care whether the students get a good deal or not."

Subsequently, he worked with top management and academic staff to ascertain how the PBL program would be run in terms of assessment and class organization. As a top management staff put it, "*There were some givens ... given to us by Dr Alwis according to his vision. ... The one-day-one-problem was a given. But above those givens, it's really about trying to flesh out what it is that we would do."*

OAA was thus charged with this system as they were responsible for the quality of RP's education and best positioned to determine how the system could support RP's academic process. As a top management staff stated, "*In many ways, LEO is the shop front window to our educational processes."*

Concurrently, RP laid the foundation for their IT direction. This was spearheaded by their Deputy Principal who was the *"Indian chief that [saw] to this [e-culture]"*. His strong backing was a key driving force behind RP's pervasive use of IT. As a RP IT staff noted, "*If management doesn't believe in IT, it becomes second. ... But if you put IT at the forefront and then you try to fit the business into existing IT models, that will e-enable a lot of systems."*

This led to several key IT tenets in RP. RP operated entirely wirelessly. Hence, they advocated the use of laptops and IP phones. There was also a drive towards a paperless campus, which led to the heavy use of e-documents for

academic and administrative purposes, such as using e-signatures on e-contracts. Another key tenet was the heavy reliance on outsourcing, which was strongly advocated by the Deputy Principal and top management. RP thus avoided developing their own software, as they purchased existing packages and worked with vendors to modify them to suit their needs. As a top management staff elaborated, "*It's a corporate … decision ... Get the expertise from somebody else. We don't want to build the expertise of writing software. We only want an outcome. That's all."*

With the educational direction in place, attention shifted to leveraging off the IT to facilitate RP's direction. Evidence from other institutes showed that students used laptops for basic activities, such as downloading lecture notes and visiting websites. RP top management felt that if they decided on this direction, laptops should be more heavily used to fully faciliate their PBL process. They thus decided to explore e-learning and having a RP-wide system to support this process, with the understanding that the PBL pedagogy was largely inviolate to they needed a system that closely fit the PBL direction.

The schools and centres in RP had their own unique curriculum and impressions of how this curriculum should be taught. This was championed by their respective Directors. The system thus had to satisfy all the departments. However, given the core PBL pedagogy outlined by OAA that everyone would employ, the system should still largely be used in the same way across all these departments. As the Director of OIS noted, "*This doesn't mean that*

working in a silo means you can be king. All the departments and OIS must gel and work together."

While top management understood RP's overall direction, incoming academic staff lacked appreciation of RP's education and IT direction. Efforts were made to educate them about RP's vision. For example, each department held twice weekly workshops to communicate ideas, transmit policy decisions, and provide the OAA Director with feedback on his decisions. As a top management staff expounded, "*Those sessions were as much about trying to get people to understand ... why it is that we were trying to do those things ... It was about trying to sell the ideas as much as trying to collect ideas."*

While most academic staff strove to embrace RP's culture, some were resistant. Hence, top management forced them to accept RP's direction, with the idea that while they would initially reluctantly buy-in, as the number of staff grew, latter staff would be less inclined to resist. As an academic staff explained, "*We're not trying to put end users in a difficult position but we're just doing what we need for the entire organization."*

It was suggested that part of RP's success in getting staff to support their direction was that RP was new. As an EIS suggested, "*That's the difference when you work with an organization that has a legacy and one that doesn't. There's a lot of mindset changes. So at RP, they can do a lot of things new."*

4.1.2.2 Vendor Selection

Top management then evaluated various ES including packages from vendors such as Blackboard and Wizlearn, and generic off-the-shelf packages. This process involved many different RP stakeholders, including academic staff, corporate staff and OIS staff. The main person in-charge of this process and key decision-maker was the OAA Director. The other key top management staff who was involved due to his vested interested in RP's IT systems was the Deputy Principal. Several top management staff was involved due to their prior expertise such as their e-learning background, their authority, or to represent their departments. As an OIS staff noted, "*Whatever we implement, whatever policies we come up with, our processes that we come up with, it will affect end-users. And end-users are the subordinates of these directors. So when we implement something, communication is also very important."*

Although at this juncture only key top management staff such as the OAA Director fully visualized RP's needs while the rest were still learning about the PBL process and RP's direction, many academic staff were still involved in the selection process but their input was limited to generic package features, such as the interface. Likewise, OIS staff served more as internal consultants and focused on evaluating technical issues such as security and load management, rather than on the actual system functionality. Everyone thus attended all the vendor presentations and had regular internal discussions with top management staff on the packages' fit with RP's unique needs. Feedback was even solicited via email. Fairly quickly though, they felt that the available packages did not perfectly fit RP needs. As a top management staff recalled,

"*We couldn't really find a learning management system that really jumped at us ... It was more like, "We're not sure what we want to do but we definitely know we don't want to do that." ... So I think we fairly early on came to the conclusion that there wasn't anything out there that really gelled with our philosophy of education."*

One option was to customize the packages but this was not favored by RP top management who considered this to be complicated, restrictive and still did not adequately fit RP's needs. As a top management staff revealed, "*Having gone through a few rounds of customization of SAP, Oracle and things like that, it's a very painful process ... So they've got 9000 options that you can choose from. And then, through all this jungle of options, you've got to make sure you choose the right one. But you choose the right one, it affects another application of some other module somewhere. Then it becomes complicated. And all you're trying to do is manage this options matrix. But in reality, you didn't change anything."*

Instead, RP sought a package that could be modified to suit RP's business and IT needs. In fact, top management was prepared to accept a fully modified system. Only Wizlearn was willing to work closely with RP to revamp their package. Most other vendors were unwilling to heavily modify their packages. As a top management staff noted, "*We find that unacceptable especially in this day and age ... I can tell you it makes nonsensical sense, non-business sense for a business to go along with the features and functionality of the software*

for the purpose of doing just that. Finally, the solution must meet the business requirements, not business requirements meeting the solution."

Another concern was potential delays in getting support from a major overseas vendor that had to balance the diverse needs of multiple customers. In contrast, Wizlearn was based locally and more easily accessible, and was used to providing regular and prompt package modifications for customers. The decision was thus made to hire Wizlearn. As a top management staff stated, "*We wanted ... some people here who ... would work with us. And we were looking for very close support, which perhaps our demand was much higher than almost anybody can supply or provide. Even Wizlearn was struggling to keep up with us."*

4.1.3 Development Phase

4.1.3.1 Setting up Development Team

The main priority here was to get the system running. This task was delegated to a new LEO development team that comprised of a RP Project Manager (PM) and external IT staff from Wizlearn (EIS). RP appointed the PM at the start of this phase, which was scheduled to last six months. Among other reasons, he was appointed for his prior experiences with e-learning platforms and, as an academic, his familiarity with general academic issues. The PM was overall in-charge of the project. He reported to the OAA Director but had discretionary authority to decide how the system was developed. The PM also served as the interface between the EIS and RP staff. As the PM described, "*My job was to figure out all the requirements and translate them into this list*

of IT-type requirements, and to communicate that to the project leader in the Wizlearn team who will then take that and be responsible to ensure that ... it would be performed on time."

Wizlearn seconded a team of IT staff (EIS) to work full-time in RP on the system, and charged RP based on the headcount and type of staff they sent to RP. RP could easily inform Wizlearn on the different skill sets they wanted and Wizlearn would assign a team that provided the necessary services. For example, when RP wanted a more technical staff, Wizlearn recruited someone from HP and seconded him to RP. As the IT Director highlighted though, "*The key is not the outsourcing company, but who they send to RP to do the work."*

This allowed the EIS to focus on shaping LEO, as the EIS felt that if they were stationed in Wizlearn, they would have to work on non-related tasks. In addition, the EIS were more visible to RP staff as they could see them working. RP staff thus developed a higher degree of trust in and a closer bond with the EIS. As an EIS expounded, "*That's why having our staff there is good. Because the users at least see them. They can see that they are working there. Somehow, you can be working but if you're back in office or somewhere, people don't know that you're working. Somehow that is still our human mindset. You may talk about all this virtual telecommuting but somehow human beings, we're still very visual people."* Upon arriving in RP, the EIS underwent a basic orientation program to give them basic understanding of RP and its direction to ensure that they understood how best to modify the package and why it should be modified in that way.

4.1.3.2 Developing LEO

Attention next shifted to gathering user requirements. A key source of information on PBL was the OAA Director. However, he rarely interacted with the EIS directly, as the PM conveyed his requirements to the EIS. For example, the OAA Director prepared several algorithms to support PBL before passing them to the EIS via the PM to be implemented. The CED Director was another important contributor of requirements as he worked with the OAA Director to realize the PBL process. As the PM highlighted, "*At that time, the methodology was still in flux. There were basic principals involved and Dr. Alwis was the one who could answer questions if he was asked. ... But if nobody asked him, then the answer would stay with him ... So, there was a need to find out about how the system would run, and then translate this into database requirements, system requirements, and then embark on a program, on a project to develop this."*

Otherwise, other top management staff had little involvement in this phase as they deferred to the IT experts to develop LEO. However, in some cases, they did contribute, particularly for areas of personal interest or issues that affected their department's curriculum. For example, a top management staff pushed for a more consolidated design of the assessment page as he found it more convenient for grading. In another case, a top management staff evaluated whether to retain control over module creation in LEO or delegate it to the module chairs. As a top management staff said, "*I haven't been involved in the day to day operations. I mean, it's my job to make recommendations about*

what LEO should look like ... It's people like [the PM] who have gone along and told their people, "Come on, you'd better make this happen"."

Academic staff was largely not involved in this phase. One reason was that their main focus at this time was on understanding the PBL process and organizing the curriculum. Moreover, as the staff population grew, it became too unwieldy to involve all of them. However, as development progressed, more of their input was sought on general interface issues to garner their buy-in. Hence, a compromise was reached to communicate via intermediaries rather than directly with the entire population. For example, their feedback was filtered through their Directors. Each department also nominated one staff to be part of a development evaluation team and liaise with the LEO team. As a top management staff explained, "*So then there would be some communication. So that there is some awareness going on and they can see things taking shape. Not that they would come to the first day of term and see the interface for the first time. That would be a disaster."*

OIS staff assisted the PM in stating technical requirements. Also, since the system and data resided on OIS managed servers, the EIS worked in a test environment before asking OIS to import or update the database and server since the EIS had no direct access to the infrastructure. Otherwise, the EIS were self-sufficient so there was minimal contact between them and their Wizlearn colleagues beyond seeking clarification on certain package features.

The LEO team then focused on facilitating the fit between the package, RP's requirements, and the needs of diverse RP stakeholders who had their own views. This necessitated a close relationship between the PM and EIS. The PM told the EIS what needed to be done and closely monitored their output, feeding back on what worked well and what needed to be improved. As the PM noted, "*The Wizlearn team … reported to me directly in the sense that my task was to decide what needed to be done. ... In IT terms you have to be very precise, like you know, you have 25 things so you must list 25 things and check that all 25 are done. ... Then, when you list each thing, you have to explain it sufficiently so that the team is clear what you mean."*

To facilitate their collaboration, the PM and EIS were housed in the same location, which was near the office of the OAA Director to boost knowledge sharing between the OAA Director and PM. As a result, the LEO team engaged in daily face-to-face and electronic discussions. As a top management staff stated, "*It was based on a good common understanding by two people full-time engrossed in this project and were therefore always thinking about it, and were sitting next to each other and always could ask each other to clarify, and regular checks made."*

This phase primarily involved changing the package. The package supported several RP functions that only required minor adjustments, such as renaming the "lecturer" field to "facilitator". However, a lot of reorganization and modification was also required, such as to support RP's unique assessment process. For example, once the decision was made to conduct the

Understanding Test via LEO, the EIS had to modify the package to limit communication and access to the Internet during the tests. The PM's delegated authority enabled him to quickly enforce changes. Likewise, the EIS project leader had intimate knowledge of the package since he helped build it and was authorized by Wizlearn to make changes as required. Top management though, advised the LEO team to delay non-critical changes until post-implementation to minimize package modifications to speed up development and avoid introducing too many unknown variables before roll-out.

4.1.4 Post-Implementation Phase

4.1.4.1 Stakeholder Education

LEO was not ready until about four weeks before the first semester so there was insufficient time for user testing. Moreover, RP staff was focused on finalizing the new curriculum and PBL process. Hence, as a top management staff put it, "*I don't think there was a lot of time spent on, "Do you like this or don't like this?" ... There wasn't a lot of that sort of testing."*

Furthermore, staff felt that it did not matter who evaluated the system as long as it was an academic staff since they would all use LEO in the same way. Several staff sought to alleviate concerns by pushing and volunteering for a small trial run so they could see the system in operation. Most users though, never really saw the system until it was rolled out.

At this juncture, only the LEO team was well versed with the system. Everyone else only had a rudimentary holistic understanding of LEO at best.

The PM researched how other institutes rolled out similar systems and found that they had formal training and thick manuals with detailed instructions. This was not what RP wanted since top management were unconvinced that such formal training was the best way for people to learn to use LEO. They felt that there was only so much that a user could absorb during such sessions and they tend to forget what they learn after a few weeks without exposure to the system. Instead, they felt that the system was intuitive thereby requiring zero training. As a top management staff noted, "*We don't waste time pulling in fifty staff and spending the whole day telling them which button to click. I just don't think that's effective."*

However, according to staff surveys, many staff were nervous about using the system since they were unfamiliar with it and not confident in using it. Thus, top management compromised and the LEO team conducted a compulsory basic training session for all staff as part of their week-long foundation program. This short hour and a half LEO training session and demonstration covered the core actions that users would perform. However, this had limited benefits due to their narrow scope. As a facilitator stated, "*They had a short induction course. Basically lectures which didn't really work."*

Hence, for later intakes of staff, this was extended to a half day and later one day session. During these sessions, staff could test the system, albeit in the role of a student, due to security concerns in granting staff access during training. This still limited the usefulness of the training as staff could not explore the features they needed to use as facilitators thus generating some

confusion. Latter sessions though, did cover how the use of LEO differed for a facilitator and module chair, to provide a more comprehensive grounding in the system to facilitate further education. The combined sessions involved a mix of staff from across RP, which enabled inter-department interaction and inter-relationships development.

Instead, the focus of the compulsory foundation was on educating staff about the PBL methodology and RP culture. As a facilitator noted, the focus was on *"induction, indoctrination"*. A top management staff admitted that the process was akin to *"playing psychological games"*. As an internal IT staff noted, "*There's a lot of training and ... preaching sometimes. A lot of convincing."* The foundation program was thus conducted by the HR department who wanted to focus on RP fundamentals first so facilitators could conduct classes according to the PBL philosophy and understand why RP did what they did.

The LEO team also provided ad-hoc training so staff could grow their knowledge base when necessary instead of learning everything at the beginning. For example, when facilitators adopted different roles, such as problem crafters or module chairs, they received additional training on the extra features of LEO they had to access. This was typically run separately of the training staff received on their additional responsibilities in these new roles to facilitate the PBL process.

Before each semester, the LEO team also arranged for sessions to familiarize module chairs with new features in LEO. Sometimes, the LEO team rolled out

major system changes during the semester and provided ad-hoc training for affected staff. Ad-hoc training was provided to affected staff in every department since the use of LEO across RP was standardized. A facilitator provided the following analogy, "*If you compare with a Word document, everybody knows how to open a Word document, just like everybody knows how to type. ... Of course somebody will be able to do formatting, colouring, heading, page number, all that yes, that's advanced features. So LEO does have a little bit of advanced features. But do everybody need to know it? ... Do we need to teach them every single thing up to how to put in a page number? I don't think we need to.*"

After undergoing this basic training, most staff engaged in on-the-job education to learn to use LEO. This was preferable to staff who found little benefit in attending formal lectures on LEO and preferred a more hands-on approach to learning. It was also the main approach when the system was rolled out since at that time, everyone was equally unfamiliar with LEO. Users read the instructions and played with the system on their own to learn about the various features of LEO. In addition, they learnt about LEO during their daily facilitation, as this provided an avenue for them to identify gaps in their knowledge about LEO. A facilitator provided the following example, "*You never can learn a tool until you experience what the tool is used for. So only until you come to class and you realize that, "Hey, I need to take attendance. How do I do that in LEO? Oh, here's how you do it." That's when you learn.*"

Informal peer learning was another approach to learning about LEO, which grew increasingly popular as more staff became familiar with LEO. In some cases, this meant that staff approached the LEO team directly for clarification. However, in most cases, this referred to staff-to-staff peer learning. As a facilitator elaborated, "*I think it's better that way [to use peer support] too because if you think about it, if we have hundreds of staff members all going to the LEO team for help, that would be a problem, right?"*

As senior staff became familiar with LEO, new staff easily informally approached them for assistance. There was even a formal buddy system where new staff was paired with more senior facilitators. They interacted either face-to-face or online via Instant Messaging. This approach was desirable given the close working relationship in module teams. As a facilitator explained, "*I think it's mostly because when we facilitate, it's always in a team ... There's definitely people who are more experienced in that team. So they're definitely a great help. They usually are the first line of assistance when we need something. ... If we're doing it on our own, it's more difficult I guess."*

Another group of staff who relied on this mode of learning was those who were promoted to the role of module chair. They approached other module chairs in their or other department for guidance. Also, since RP advocated a collaborative culture, senior staff would sometimes proactively approach new staff and offer to teach them how to use LEO so they could better employ the system in facilitating their modules, to the benefit of the department and RP as a whole. As one facilitator admitted, "*Yeah, they've been really helpful. That's*

one of the things I like about working here at RP. ... They are more than willing to help others who are in difficulty so like I was relatively new around here, but it was easy and relatively painless to get whatever help I required."

Staff generally used a mix of on-the-job education and peer learning to understand LEO. As a top management staff summarized: *"The best way to learn the software really is learn to use it while you're using it but make sure you've got colleagues there to answer your questions and help you while you're engaged in using it."*

The LEO team also provided a FAQ to support self-education. The FAQ included detailed guides with step-by-step instructions, screenshots and online movies. Many facilitators though, did not regularly use the FAQ, with some professing that they did not know that such a FAQ existed. This was largely because they generally learnt when the need arose but in those situations, a solution was often urgently required so they had time to search the FAQ.

4.1.4.2 System Maintenance

After roll out, LEO was still being upgraded and improved, as the LEO team continued to evaluate how to maximize its use. This was an ongoing process where they received regular feedback and tweaked the system. As a top management staff elaborated, "*A lot of feedback comes back, we pass it on to the designers. ... Actually fixing the problem as we move along. And I felt that this is the right way to implement complex systems."*

The LEO team, under the OAA Director, remained in charge of LEO. RP staff was comfortable with this arrangement as they felt that the LEO team adequately addressed their diverse concerns. As a facilitator elaborated, "*The people who gather around to make the changes are not entirely IT people. So besides the LEO team consisting of our programmers, ... he [the PM] has always been an academic staff. The other persons involved ... the Director of OAA. ... Whereas, if it was entirely IT-driven then we'll be a bit concerned."*

Wizlearn's ownership of LEO diminished, as the LEO team continued modifying it, as both Wizlearn and RP staff acknowledged that the package modifications radically changed LEO into something different from the original package. In fact, besides the EIS staff seconded to RP, other Wizlearn staff were unsure about the scope of modifications. As a top management staff stated, "*Some of the Wizlearn people have come and ... asked for permission to talk at conferences about it [LEO]… I think we're still trying to determine who actually owns it now given the amount of work that has gone into it."*

The impetus for change in this phase came from many sources – top management, LEO team and academic staff. As the PM elaborated, "*One [source] is major shifts in requirement [by top management]. An example for that is Understanding Test. ... Another source for change is, I guess, things that come to the development team, to me or to others involved in the development team. Either we see a more efficient way of doing things or we recognize that there are bottlenecks or even bugs that arise. ... And the third source would be from users. Users would either request for new features or*

say that something is too troublesome to do or something can't be done or that something was wrong because ... what the system provides and how they expect things to work in real life do not match for some reason."

To encourage more creative contributions, top management promoted a liberal environment for staff and imposed few restrictions beyond the need to follow RP's PBL methodology. They also moved towards an even more integrated organization, such as by linking HR's student information system with LEO for more seamless processes and information access. This also helped staff see how their use of LEO was inter-related. As an internal IT staff noted, "*It is not too bad [working with all these different people]. ... Because at somewhere along the line, you know somebody is waiting for, I mean this process is waiting for this process to complete before the other process can start."*

Staff was thus more inclined to suggest ideas about LEO that benefitted their department and RP as a whole. They even had formal and informal discussions on what they and LEO should do for RP. This mindset was proactively driven by a few key staff in each department. As a facilitator explained, "*I think credit should go to certain members in each and every department. There are certain people who share that vision and, you know, they do see and that's something they do believe. ... If they can recommend a solution to everybody, they'll do it. It's inculcated rather than policed."* Top management supported this mentality. For example, the OAA Director wanted academic staff to embrace a more hands-on end-user computing role for RP-wide LEO projects such as moving the Understanding Test offline, instead of always relying on

the EIS. Likewise, the student evaluation system that was run off LEO was developed and managed by an academic staff who also compiled the data for individual and RP-wide analysis.

Sometimes, staff had formal and informal inter-department discussions about issues they faced with LEO to share ideas and devise broad-based solutions before sending them to the LEO team. For example, ad-hoc teams comprising of staff from different departments were formed to study LEO and suggest improvements. As a facilitator recalled, "*I think just a few months back, I think either it's initiated by them [LEO team] or initiated by the OAA. ... To actually get a wish list for the LEO system. And I think we have compiled quite a considerable list on it."*

Several staff still maintained a modular or department mentality, and was oblivious to RP-wide contributions of other staff. For example, one Director adamantly disputed the idea that staff in another department was developing their own applications that tapped onto LEO for RP-wide use. Consequently, their interactions were largely restricted to within their module or department, where they had intra-department discussions before proposing change requests mainly for their module or department. Given their close proximity, they mainly preferred face-to-face interactions. A facilitator provided this example, "*Definitely I think face-to-face meeting will be more effective. ... Any problems get sorted out much faster. I remember like last semester, I had one full-time facilitator and one part-time facilitator. So the part-time facilitator, our mode of communication was more of through the phone. But when I communicate*

with the full-time facilitator, obviously we don't use the IP phone here. So I talk to her via MSN or I go up to the cubicle and discuss."

Finally, there were several staff who maintained a personal orientation and this was reflected in their suggestions which typically did not accommodate all of RP. In most cases, the LEO team rejected these suggestions and asked the staff to use workarounds. Thus, several staff sought to get around RP-wide restrictions for their convenience. For example, at one point, the LEO team restricted access to LEO to Internet Explorer. Rather than consulting the LEO team, several staff used a workaround to continue using Firefox while emulating Internet Explorer to gain access to LEO. Many of these staff also had little understanding of RP-wide issues, such as broad changes to LEO, if they did not directly affect them.

Regardless of the motivation for their suggestions, staff shared the same channels for communicating change requests to the LEO team. The PM explained the rationale for maintaining multiple feedback channels, "*There is multiple channels. And we're not stopping any one of them. ... Because the important thing is to get feedback. If you try to limit to only one channel, then by the time I feedback, I'll forget what I wanted to feedback. So that defeats the whole purpose."*

The main formal channel was the Staff Suggestion Scheme (SSS). In fact, as part of their annual evaluation, staff had to contribute at least five suggestions annually via SSS and they received a small monetary reward of $2 for each

suggestion. Although SSS catered to all types of suggestions, about 50% of them were LEO related. Even the potential for duplicate suggestions was tolerated because, as a top management staff noted, "*Most of it is repeated, most of it is re-discovered by people. But that's fine, you get feedback. After a while, you get ten, twenty mails on the same thing then the LEO team better take a look at it because it's bothering a significant number of people. ... I encourage them."*

All suggestions submitted via SSS were forwarded to the Deputy Principal who routed them to the correct party to handle, with LEO related suggestions sent to the PM. The PM discussed with the EIS, evaluated the suggestion and promptly replied to the person sending the suggestion about whether the suggestion would be adopted or to explain why it could not be implemented. The PM had full authority to decide which suggestions to accept and reject, as long as his decisions were clearly justified. Although this created an inordinate amount of work for the Deputy Principal, he advocated this approach as it gave him first hand insight into the issues plaguing RP staff. As for staff, they welcomed this approach, as it lent greater credibility to their requests. As a facilitator stated, "*If you go through an email directly to the [LEO team], sometimes we are talking about things which are on a larger picture that may not be, they may think, "Who are you to say something?" But if it's something which is from upper management [i.e. seen by the VP via the staff suggestion scheme], probably that would be easier."*

Another formal channel for escalating LEO-related issues was via the program chairs. This minimized the official contact points between each department and the LEO team. Suggestions were funnelled through the program chairs so if the LEO team received change requests from other staff, it would flag to the LEO team that something was not right. Generally, this channel was for more serious suggestions. A facilitator provided this example, "*Sometimes the students have to do their module selections online and sometimes students ask us why it is that they can't select this particular module, and that is when I went to the program chair. ... These are not exactly the day-to-day problems."*

Staff could also directly contact the LEO team by submitting change requests to their helpLEO email account. Staff that regularly used this feature generally had little, if any, face-to-face contact with the LEO team. For example, one facilitator said he regularly contacted and worked with a particular EIS for over one and a half years but has never met her face-to-face. These emails were automatically forwarded to all members of the LEO team so they could be promptly addressed. As a facilitator recalled, "*I believe there will be somebody manning this [email] because I think there is a service level that they must respond to, oh, first off I'll get an automatic acknowledgement so I would think it's automated. And secondly, I would get my help. And the help comes within, I think, very, very soon after that."*

Alternatively, especially for those who had fostered a close working relationship with the LEO team during the early years of RP, staff could directly contact members of the LEO team face-to-face or via Instant

Messaging. There is no formalized structure restricting these interactions. The OIS Director even placed the handphone numbers of himself, internal IT staff and the LEO team in every office in RP so this information was easily accessible. One facilitator elaborated on his preference for this approach compared to helpLEO, "*That [helpLEO] is a [channel] but interestingly I don't do that. I guess it's easier for you to ask help from somebody once you know what the guy looks like, their personality, the face."*

This approach though, was not commonly advocated as it could confuse the EIS since they could receive different suggestions face-to-face or via helpLEO or from the PM. Thus, certain top management began discouraging their academic staff from employing this channel. As a top management staff succinctly stated, "*No, they [academic staff] shouldn't [contact the LEO team directly] because that can be damaging. Too many cooks."*

All the change requests were managed by the PM. Even if the EIS received change requests directly, they forwarded them to him. He still conferred with the OAA Director, such as for major change requests. Otherwise, he evaluated the requests. Wizlearn supported the PM fulfilling this role. As a Wizlearn staff explained, "*They [RP staff] will give feedback. Then he [PM] will consolidate and he will give back to us [Wizlearn]. So in a way, it makes it easier for us. We don't have to work with different groups. Instead, if there's any priority issues, we can escalate to him and he can give the direction. Which I think is also good because as a vendor, you don't want to end up working with different parties."*

Generally though, the PM favoured consultation with various stakeholders first before deciding on changes. Although he could not consult everyone, he consulted key stakeholders, such as the OAA Director, and a sample population of the staff affected by the change. This helped him to achieve a certain level of confidence before deciding since he could assess the suggestion from multiple perspectives. As the PM expounded, "*You can't issue a decree to say that, "We'll do this" and get the best for an organization. You have to do a lot of consultation. You have to win over the program chairs, the module chairs who set the questions, the directors who are in charge of the overall running ... IT department's stakes were, "I want a secure system." ... With the director of academic affairs, his concern was that we had a sound academic system with good quality [curriculum]. ... And that facilitators too will not find things too cumbersome. ... When everything is settled and decided, then the decree can go out that, "This will be done" and to everybody, it's no surprise. They will just do it."*

Sometimes, the LEO team discussed ideas further with respective staff via email, Instant Messaging or face-to-face. This helped them clarify what the staff wanted and, where necessary, to explain to the staff why their suggestion could be implemented and to propose workarounds to the staff. This was particularly the case for suggestions that went against RP's core direction.

The PM then prioritized the requests. Simple suggestions, such as errors in the code, were handled immediately. More complicated suggestions were held

over until the term break when the load on the system was lower. Frivolous requests, such as beautifying the LEO interface were typically shelved until a later date. Finally, suggestions that went against the RP direction or benefited a particular module or department but could negatively affect or not benefit other departments were rejected. As a top management staff emphasized, "*Initially [we] have to compare against the original objective. Does this run counter to the intention or not. If it runs counter, then [we] say no. If it can go without doing any damage, yes. But if it's something that will actually enhance what we want to do, then with all force and might, we'll get it done."*

The EIS coded the changes. The EIS then implemented them themselves or worked with OIS to implement them as OIS managed RP's IT infrastructure, such as their databases and networks. Top management felt that with the PM overseeing the project, there was no need for a high level team to monitor the LEO team. However, the OAA Director kept a close eye on the LEO team since he was ultimately responsible for the system, although he only became involved when truly necessary, such as in issues related to the RP culture.

For example, the OAA Director was analyzing the correlation between the different grading components and students' grades and found an uncomfortably high correlation between students' grades and their quiz score, which went against a basic tenet of their PBL pedagogy. Hence, he briefly conferred with the Director of CED before asking the LEO team to block facilitators' access to the quiz scores before grading. The LEO team emailed staff to notify them about the change and a few hours later, it was

implemented. As the PM noted, "*If you have someone high up, who wants something done quickly, then that usually gets done quickly".*

Staff was caught unawares by this change. This was an example where there was little formal discourse between top management and staff prior to the change. In another example, top management evaluated conducting the Understanding Test via students' laptops in their classrooms. They asked the LEO team whether this was possible and despite learning that it was possible only with major challenges, top management still issued the challenge for the LEO team to do it.

Such heavy-handed enforcement of changes led to displeasure and several staff replied to the mass mail about the change to seek clarification. Top management's rationale for not explicitly requesting feedback was that RP had an open culture so they knew any feedback would be proactively forthcoming. After the change, OAA conducted ad-hoc briefings to explain the rationale for the move and most staff accepted its necessity for the overall good of RP. As a facilitator recalled, "*Yeah, there was an email sent out before the viewing of the quiz scores were disabled. ... After that, we had a session whereby they [OAA] came down to explain ... Of course there are some people who are more resistant to the way that they have been doing things. But after that discussion, those people got a better sense of why that change was implemented. So then that was okay."*

Generally, after implementing the change, the LEO team would inform the person who made the suggestion. If the change was minor, users were left to notice and understand the change on their own during their day-to-day use of LEO. For more advanced changes, the LEO team ranged from merely sending a notice about the change to emailing detailed step-by-step guides on how to cope with the changes. A copy of the guide was uploaded to the LEO help repository for future reference. Users could refer to this repository at any time to find information and guides. However, given the number of documents stored here, most users rarely browsed the repository unless there was something very specific they were seeking. Finally, for major changes, the LEO team may conduct ad-hoc training for affected users.

In general, there were three types of changes implemented. The most common type was modifying LEO to fit RP's and stakeholders' needs. The EIS thus modified existing package code or added new features to the package. As the PM highlighted, "*There is always the need to enhance the system because our methodology keeps changing. We are a dynamic institution."*

The second type of change was to change stakeholder needs to fit RP requirements and package limitations. The LEO team would explain to the stakeholder why their request was denied and suggest alternatives. An internal IT staff provided the following example, "*Sometimes, staff requested for new function. This function is just, "I need this information. Can you put it there for me on this ... page?" But we may just come in and say you can get this information from [elsewhere]. So we do not need to change that ... page."*

The third type of change was to RP's educational methodology in response to diverse stakeholder needs and package limitations. This was rare as RP wanted to maintain their PBL pedagogy but it was sometimes inevitable. The PM shared this example, "*From day one, we use paper for Understanding Tests and this initiative was to do them online. ... Another aspect [of consideration] is the organizational or the academic aspect ... We very soon realized that if we conducted the test online, it means that students are using their notebooks and therefore, they can do anything they want on their notebook, and it's not practical to stop them .... So the decision was made that as long as we go online for Understanding Test, it has to be so-called open book."*

4.1.4.3 Fostering Holistic RP Identity

Fostering a holistic organization-wide identity for internal and external staff was an ongoing challenge in RP. Their organizational direction, and how it affected their use and maintenance of LEO, was unique in Singapore and constituted a paradigm shift for staff going to work in RP. Hence, this activity warranted due consideration as an independent activity during this phase. The RP mentality advocated greater flexibility for staff to contribute to enhance LEO but they had to concurrently be firm to ensure their organizational culture and direction remained intact. This was more challenging when dealing with more individualistic staff. As a top management staff elaborated, "*There's always people ... who I see are quite isolated, are quite quiet. ... They are in their own little quiet part of the world and RP to them is this little bit, this one*

module. So the challenge is how to get them involved in understanding the organization goals so in their own way how they can contribute towards it."

RP advocated an informal and flat hierarchy, which strongly encouraged feedback and constructive criticism. This open door policy was facilitated by having little bureaucratic structure. Hence, staff could conveniently and frequently contact their peers, IT staff and top management via Instant Messaging, email or face-to-face. As a top management staff described, "*My management style is a very open consultative management style. So I'm open to any form of suggestion, anybody walking into my room and saying, "Let's talk about something." So, the culture is one of openness, transparency, allowing open discussion with no fear of repercussion. ... As long as we're not harming somebody else, we should be okay."*

However, with the growth in the RP staff population, departments became bigger. This led to a polarization of staff within the departments, as they focused more on maximizing benefits for themselves and their modules. Consequently, there was the danger of them becoming overly individualistic in their work and view of LEO. As a top management staff summarized, "*[Previously] information will flow, it was a flat piece. If you pour water, it will spread everywhere ... That chapter closed and became more individualized. ... So it's harder to do that kind of communication. ... And then you get polarization. You get people with the thinking, "It's us against you" rather than forgetting that we're one big group."*

Each department sought to promote greater intra-department interactions. For synchronous interactions, departments organized weekly staff meetings. Top management also used these meetings to reinforce RP's core messages and set a moral compass for staff. For asynchronous interactions, they relied on emails or their own internal online feedback systems. Staff was also encouraged to engage in face-to-face interactions with their colleagues since despite their convenience, emails and Instant Messaging did not provide cues such as a person's body language. Consequently, staff better understood issues facing other modules in their department and became more willing to share ideas with their peers to come up with suggestions to improve LEO that benefitted their department as a whole.

Concurrently, RP sought to enhance inter-department interactions. Generally, RP staff had a casual social relationship with staff from other departments, such as those they met during RP-wide training sessions. RP advocated cross-department collaboration to leverage off their diverse skills and indirectly facilitate broader understanding of RP-wide issues, such as between departments working on joint projects. Inter-department interactions were also promoted via twice monthly RP-wide staff sharing sessions that departments took turns to host. Although discussions on LEO formed merely one part of the information shared, their main purpose was to develop inter-department relationships and facilitate cross-fertilization of ideas. Another approach was to second facilitators from one department to another department to teach a module there. One facilitator from SIT shared her experience, "*This term, I'm doing problem-solving and cognitive skills, which is outside of the discipline,*

which I'm okay with that. In fact, that's good because it's cross-functional and it gives me a feel for how the CED folks are looking at PBL, and interacting with them is great."

To bolster both intra- and inter-department interactions, RP used less tangible approaches such as peer pressure. Staff with a collective mentality proactively championed the RP-wide direction to their peers. As more staff embraced the RP culture, the likelihood increased that new staff would follow suit. New staff who did not know how to use LEO faced psychological pressure to learn quickly to facilitate efficiently and be on par with their peers. As a facilitator recalled, "*Once in awhile, if one or two people come with a mindset that's, I'm not saying bad, but running contrary to the general mindset in the organization, so you correct those mindsets by way of being an example to them or by way of pulling their collars and going one side and telling them off."*

One particular challenge was to inculcate the RP culture in the EIS seconded to RP. Top management felt that all staff should be treated as internal staff. Convincing internal staff though, was difficult as they were conditioned to treat seconded staff as outsiders and maintain a staff-contractor relationship. A top management staff lamented, "*Unfortunately, [some of] our staff feel like they somehow are more important than the contractors ... How do you get people out of the mindset that it doesn't really matter who is your paymaster?"*

Similarly, changing the mindset of the external staff was challenging since their loyalties and identities were torn between RP and Wizlearn. One problem

was their staff rotation policy, as Wizlearn regularly rotated the staff they seconded to RP to accommodate changes in RP's requirements or because the vendor required their skill sets in their main office. Hence, the EIS knew that their tenure in RP was not permanent and this hindered their willingness to commit fully to RP.

While vendors supported a close working relationship between their seconded staff and RP, they understood the need to maintain these staff's links to the vendor. Wizlearn regularly invited their seconded staff back for social and knowledge sharing events. The Wizlearn representative overseeing the contract also regularly visited the seconded staff for lunch. Despite these efforts by Wizlearn though, as a top management staff elaborated, the main message RP conveyed to external staff was, "*Does it really matter whose payroll you're on? ... Yes, you're employed by Company A. But you're here 8 hours a day, 9 hours a day. You never even sit or go back to your own office. Because if you go back to your own office, the guy got no table for you. So you should feel more at home with us than your own company. In fact, your loyalty may be with us than with your own company."*

To facilitate this, external staff was given the same benefits as internal staff, such as a common RP pass, email address, laptop, access to resources, gifts and rewards, and participation in social events. They also had the same responsibilities and demands as internal staff. As a top management staff proclaimed, "*I assume that you will do a damn good job for me. Because I don't have IT people anymore. I'm dependent on you! So you cannot say, "Oh,*

my contract says I only say 100 words a day, therefore it's a 101st word so I cannot say anymore. No. I expect you to contribute the 101st word and 120th word and 180th word.""

Consequently, seconded staff felt a closer connection with RP and worked more efficiently for the benefit of RP. RP staff thus did not perceive any difference in the service level of external and internal staff. In fact, many staff could not even differentiate between them, and several staff, ranging from academic staff to top management, even thought that RP no longer had external staff and the LEO team comprised solely of internal staff. As a facilitator revealed, "*No [I don't see a difference], because it's ... packaged as one entity. So the people in the entity come and go but I just see as the entity."*

Despite these challenges, as a top management staff noted, "*It's essentially technology and systems that we require to put in place. Philosophically, I think we're there."* Staff was largely happy with the LEO system and considered it a relative success. Despite several areas for improvement, LEO was easy to use, suited their needs, and was uniform and organized. As a top management staff said, "*In a way, I think we've had some success but I won't say it's a roaring success or whatever. But certainly we've done something quite different."* Even so, RP continued to try and enhance LEO and its fit with RP's direction and diverse stakeholder needs. As a top management staff revealed, "*Many other people ... may say, "Gee, we'd be very happy if we could penetrate to this extent and get this organized." But we're looking from our standards, not from their standards."*

4.2 Case Description: Singapore Power Services' EBS Implementation

4.2.1 Background

Singapore Power Services Ltd. (SPS) is a member of Singapore Power Group. It has four main departments: finance, device management, customer service, and billing. SPS provides convenient and efficient one-stop customer services for electricity, water, piped gas and refuse collection to 1.2 million customers in Singapore. SPS provides support services such as billing and payment collection on behalf of these utility providers, who are the principals of SPS. SPS's vision is to provide reliable and efficient energy utility services to enhance the economy and quality of life. It also firmly believes in harnessing the collaborative efforts of pertinent stakeholders to draw strength from their teamwork (see Figure 7).

In June 2000, SPS rolled out a heavily customized SAP billing system called the Customer Management System (CMS). A system glitch caused months of delays and errors in utility billing, and customers complained of not receiving bills for many months or receiving inflated bills. About 150,000 – or 12 percent of SPS' customers were affected (Teh, 2001). For example, a jobless man received an inflated bill of $40,000 in December 2000 after inquiring about not receiving any bill since October 2000 (Kyodo, 2001). It became a politically sensitive issue when citizens complained to the MPs. The government fined SPS $150,000 in December 2000 for billing delays and for failing to resolve the problems, and Trade and Industry Minister, Mr. George Yeo, openly rapped SPS in parliament in early January 2001 (Kyodo, 2001).

Figure 7: SPS Vision, Mission and Core Values

VISION
We provide reliable and efficient energy utility services to enhance the economy and the quality of life
MISSION
Service is our passion
Integrity is our commitment
Teamwork is our strength
CORE VALUES
Commitment
Integrity
Passion
Teamwork

SPS reacted quickly, apologized and rectified the errors. It set up customer service counters in major community centres near residents' homes to explain the situation. SPS increased phone-enquiry lines from 23 to 60. An instalment plan was worked out for delayed bills, although it cost SPS $40 million in interest expenses (Teh, 2001). As Minister of State for Trade and Industry & Foreign Affairs, Mr. Raymond Lim, subsequently proclaimed (Lim, 2002), "*The situation was diffused. Trust and confidence were dented but they did not evaporate."* The experience though, made SPS reluctant to make major changes to their billing system. Eventually though, upgrading the system became inevitable so SPS worked with Accenture for two years to upgrade to a new billing system, the Enterprise Business System (EBS), based on SAP's Utilities Industry software.

Learning from the CMS implementation and maintenance, which had several thousand customizations, SPS wanted no modifications to the EBS source

code and minimal customization or add-ons. This was supported by SAP and Accenture. As a Process Owner stated, "*Basically the [CMS] system suit the business. ... The fact that there's a lot of customization ... was one of the areas of concern ... the business must suit the system, not the other way around."*

However, SPS soon acknowledged that several of their processes were unique and the basic SAP package did not support them. Thus, some changes were inevitable. A Process Owner gave this example, "*When advice letter sent, they say after seven working days, if customer did not make payment, okay, they want to auto-generate check-in, and this check-in will automatically come to us to execute. I say cannot. Because every day will be different number. ... And I don't have the manpower to execute. ... So that's why I say I still want to follow my CMS. ... So that's why I say this part have to be in there. So I fight for this thing to be in there."*

However, not all unique SPS needs could be accommodated and alternatives were required. The main alternative was to alter existing equivalent features in CMS to fit EBS. As the IT Project Manager jokingly recalled, "*Bosses said, "Okay. ... Do you have an existing equivalent in CMS?" ... So some of my guys made the mistake of saying yes. ... Because when you say yes, then the bosses [say], "Okay this one park under re-use. ... I would say forty to fifty [percent is reuse items]."* In other instances, SPS reengineered their business processes to suit the system. Finally, SPS staff employed temporary manual workarounds and re-evaluated how to resolve this misfit in phase two of the project during post-implementation. As a co-Process Owner summed up, "*I*

think the whole project is actually trying to implement the system as is, and to also suit to what we need."

The subsequent sections describe the journey the project team embarked on to facilitate the fit between SPS requirements, SAP package features, and the requirements of SPS' diverse stakeholders, during the EBS implementation.

4.2.2 Planning Phase

4.2.2.1 Pre-Project Preparation

In late 2004, CMS suffered a minor error that took seven days to rectify. The SPS Head of IS thus conducted a thorough investigation of CMS' reliability. As he explained, "*For some time I have suspected something isn't right with the system especially looking at the database growth, the unusually slow online system performance and the lack of tools in monitoring the online performance…and I was right. We were sitting on very dangerous grounds."* He found over 6,000 customizations in CMS and many were not documented. Also, all the people who worked on the CMS project had departed. As the SPS Head of IS recalled, "*People really don't know where the changes were, okay? So every time, you want to do something, you have to do study, you know, bring out the codes, check thoroughly before you can make a change. So it takes a long time."* In addition, SAP officially stopped supporting the package version CMS was built on.

However, SPS staff was naturally apprehensive about another system change. The SPS Head of IS thus had to convince all the relevant parties of the

necessity for change. In preparation, he spoke to SPS staff who experienced the CMS implementation or had secondary stories shared by staff who had since left. He also scrutinized the detailed post-implementation audit that was conducted by an external firm after the CMS project. Finally, the SPS Head of IS gathered background information from other similar projects. As he elaborated, "*I am not a SAP trained person. I went to SAP Germany, I went to SAP UK, to learn from the other utilities that have cutover to the systems recently. I went to Hong Kong, I went to China, to also look at customers who have cutover to this system after us. We also collected information from India. There was another big utilities."*

He then approached the SPS staff using the system. He met them frequently to understand and alleviate their concerns about the project by explaining why a new system was necessary. His assurances were instrumental in instilling confidence in users and securing their buy-in. This was an ongoing endeavour though, as a Steering Committee member noted, "*In the project newsletter, every issue there is a message from the MD. So the messages, of course the earlier ones, yes, we need your full support, cooperation and what. So it's not just one time that you come out and say, hey, we are going in to this."*

The SPS Head of IS also had to convince the board of directors of Singapore Power, as he needed their approval to initiate the project. He did this personally because, as he prudently noted, "*The selling to the board, I had to do it by myself, because I was new, so I didn't have baggage with the board members, with the management team."* The SPS Head of IS had to convince

the principals of SPS. They had similar reservations so he briefed them on the need for the upgrade and the assistance he required from them, particularly during testing. Lastly, he met the Singapore regulatory board, EMA, to update them on the project and its necessity. As the SPS Head of IS said, "*It took me about five months to convince the users, to convince the board of directors. ... So I had to do a lot of internal selling, convincing, explaining why we have to move away from this CMS."*

Finally, top management officially approved the project. Top management were then motivated to ensure that the system met SPS' needs and the project proceeded smoothly. *"Failure is not an option"* became a mantra that was drilled into everyone involved in the project. As the Accenture PM recalled, "*When I met the chairman [of Singapore Power] on two social occasions, the only thing he said to me was, "Young man, don't screw it up, right.""*

Learning from the CMS project, top management adopted a more cooperative approach in this project and ensured that from management down, everybody received the necessary support. Fostering this collaborative and collective mindset in all relevant stakeholders was challenging. As the Accenture PM noted, "*There's also issue about bringing the team to be cohesive. How do you bring SAP, Accenture and a client team together to work at the optimal level?"*

Before the project officially started, SPS recruited SAP to assess CMS and SPS' business processes, and ascertain whether the new package could support SPS. SAP concluded that yes, the project was feasible, and the specifications

they consolidated became part of the input to the project blueprint. A tendering exercise was conducted and Accenture was hired as the project consultants.

To facilitate the smooth facilitation of fit between SPS' needs, SAP package features, and users' needs, a clear governance structure was set up. The project involved over 100 full-time staff, and everyone was aware of this structure, and how issues would be tracked and escalated. A Steering Committee oversaw the project team. The SPS Head of IS, who was promoted to the post of Managing Director of SPS (MD) midway through blueprinting, was the project sponsor and chaired the Steering Committee, which included the new Project Director (PD) who was the Deputy MD of SPS, three Project Managers (PM) for Users, IS and Accenture, and other key personnel from SPS and Singapore Power.

Initially, project decision making was conducted at a high level between the MD, three PMs and other key Accenture staff, while Process Owners were briefed separately by the Accenture Integration Manager. The new PD changed this by setting up a Working Committee comprising of the User PM, IS PM, Accenture PM, Accenture team leads, Process Owners, MD, and other key Singapore Power and Accenture staff, with herself as the Working Committee Chairman. They held weekly meetings to discuss the project status. Many attributed the success of the project and this committee to the Working Committee Chairman. She made the final decision, if necessary, on issues that were raised during the weekly meetings and could not be resolved, and allocated SPS resources, such as giving overtime or approving staff

recruitment. As the IS PM stated, "*I would say we have a very strong Working Committee Chairman. ... In that sense, that plays a part also in project. Because it's within the company, everybody listens to the bosses."*

This governance structure enabled top management to effectively manage the project. For example, during blueprinting, the Working Committee could closely monitor and go through requirements, as they were best positioned to minimize misfits by ensuring that Process Owners did not overly push through personal interests. Likewise, top management ensured SPS staff was involved in discussions between Accenture and the principals, rather than asking Accenture to directly liaise with them.

The project team itself was divided into multiple teams dedicated to the different key project activities and SPS' four departments: customer services, device management, billing and financial. The team was housed in a common room on the fifth floor of the SPS building. The room employed an open concept to make it easier for team members to communicate with one another during the project. Top management outlined the roles and responsibilities of the parties in the team and they then adopted a more supervisory role. As the Working Committee Chairman explained, "*We have so many stakeholders including customers, union, principal, regulator and so on. I mean, it sound complicated but it's not. Once, you see, the trick is, identify problem owner. If you identify, and these are the, they are the experts in their field. [After that] I just need to give guidance."*

Diverse stakeholders were involved due to the broad knowledge required, to ensure a smooth project and minimize misfits between SPS's needs, package features, and stakeholder's interests. Accenture provided the package knowledge and implementation expertise, with many consultants coming from overseas, such as from Malaysia, Hong Kong, Australia, Europe and South America. As the MD proclaimed, "*Out of all the installations of this particular application in Asia, Accenture did 90% of them. So they had the most experience doing this."*

Several SPS staff was selected to join the team due to their prior experiences during the CMS project. As a Process Owner explained, "*It is good that they [user in the project team] represent [us] also because they are in the previous project. So they would have known what is the expectation of the project and they will also know the change, what is required based on what has the process been like all the while. So it might help them in, you know, explaining to the consultant."* There were two groups of staff. "General users" referred to SPS staff who was not directly involved in the project team, while "users" referred to staff seconded to the project team. All of them were assigned due to their business knowledge and experience so they could educate Accenture and internal IS staff about business requirements and what they expected from the system. Likewise, feedback from the principals was sought for any unique requirements they may possess.

Internal IS staff involvement was crucial as they maintained CMS for several years and had in-depth knowledge on how it fit SPS and department needs.

Moreover, since they would subsequently maintain the new system, their involvement from the start of the project was necessary. As the IS PM noted, "*The [internal] IT team doing the EBS itself is actually quite well-versed in ... this ISU. ... Apart from SAP, the experts in Singapore are actually only here."*

To prepare internal IS staff and users for the project, they attended an ISU training exercise conducted by SAP's German counterparts. This gave them an overview of the differences between the new package and CMS to boost their understanding of what the new package could and could not do. Then, before blueprinting, users were given more detailed training by Accenture on how they should document the business process definitions and prepare the FDs.

There was some initial user resistance, as they were asked to handle these tasks instead of Accenture. Users also felt that the consultants did not know enough about their business and the users were wasting time teaching them. Again, top management stepped in to address their concerns and convince them to embrace the tasks for the benefit of the entire project. Top management also explained to users that the consultants' initial lack of business knowledge was the reason why users were so heavily involved in the project to provide this knowledge.

Finally, the MD and top management pushed for SAP to be personally involved in the project so the SAP representatives could directly link to SAP and guide the team on whether proposed customizations were in line with the SAP product direction. The SAP solution architect also had more in-depth

knowledge of the package than the consultants and could advise them when they faced challenges. As the MD described, "*SAP, they will sell you the software license, but they will step back when you it comes to the implementation ... The SI partners ... when they have problem, they will write, they will report [to SAP]. So what we did was, my Group CEO and I went to meet the CEO of SAP, Henning Kagermann, in Waldorf. We had a face-to-face meeting, we said, "You must give us your commitment that you will support this, on this thing." He said yes, definitely, because, you know, when we fail [the CMS project], it affected their reputation."*

4.2.2.2 Blueprinting

During blueprinting, general users held internal discussions with Process Owners and project team users to draft the blueprints for their departments. Project team users consolidated their departments' requirements into blueprints with advice from Accenture and internal IS staff where necessary, given their experience with the package, and its features and limitations. As an internal IS staff put it, "*A lot of times, you know, just have to do extra service. Sometimes they send me things to verify because they discuss with consultant, want to know the features, then they send it again to me just to double-check whether is it the real thing."*

The departments decided on the scope of their blueprints and the Process Owners signed-off on the blueprint document (BPD). As a Process Owner elaborated, "*The Process Owner takes care of the higher level business process documentation and the solution paper, because this sets the stage for*

how the system will function and how the system is to be designed if enhancements are required or customization is required. And then the functional design I think quite a number of us left it to our users ... It's really, really specific so that is left to the level below."

One mistake from the CMS project was the lack of involvement of all relevant stakeholders so the principals were more heavily involved in this project. SPS Client Relations staff mostly liaised with them to get their requirements, and pass them to the Process Owners who incorporated them into their blueprints. At times, Process Owners who coordinated similar tasks as the principals would gather requirements directly from the principals. Then, the Process Owners would sign-off on the consolidated BPD on behalf of the principals.

Each party, though, was mainly driven by their personal or workgroup-related interests. Even internal IS staff noted that their blueprints focused mainly on their respective functional needs. A Process Owner succinctly explained this initial lack of appreciation for others' processes, "*I think maybe because it's not our own process. So we can't really relate."* This contributed to project team users' initial reluctance to do additional work beyond listing their personal and departmental requirements, as they did not fully appreciate how this holistically benefitted the project. In some cases, this resulted in misfits between different parties' requirements so top management stepped in to facilitate a compromise. As a Process Owner noted, "*If issues that are raised involve my department I have my say, and if issues that does not involve me,*

but when solutions are being proposed, I must make sure that these solutions does not impact how I work after that."

After writing up their respective blueprints, attention shifted to consolidating and integrating all their requirements. This was spearheaded by the User PM, IS PM, and key representatives from Accenture and SAP, but it was a tedious process due to the number of parties who had to be consulted during the process. As the Accenture PM recalled, "*A lot of the effort, a lot of time and effort is spent on convincing, selling the different options and debating the different options with different parties and stakeholders to agree on. I think that is very time consuming."*

To facilitate this process, team leads were empowered to coordinate departments' efforts. The leads received the blueprints from project team users then checked with other functional teams to see how business processes were integrated. Ad-hoc cross functional team meetings were held to discuss how business processes were inter-related so Accenture staff could gain a more holistic understanding of SPS operations and requirements. In turn, the team leads educated SPS staff on how their business processes were integrated and how such integrated processes were managed in other projects the consultants had implemented. As a Process Owner explained, "*I have to commend that consultant because he really goes around asking. He asked every functional team ... For me I only know business process we have to do this, but how it complicates your design and everything, I can't help you. ... I won't know how it affects their CS front office screen."*

Accenture appointed a System Integration (SI) Manager to coordinate integration. The SI manager was well versed in ISU knowledge but had to quickly pick up the relevant SPS knowledge from his interactions with SPS staff. He developed a holistic view of SPS' business processes and ensured that Accenture and SPS staff understood this view. A Process Owner elaborated on the need for such a role, "*Sometimes you don't realize that what you do actually affects another section. ... For these kind of things, I think you need quite a good ... system integrator. So I think there was an Accenture person for most of the project, which can see, you know, that this actually has an impact, of which as a user I will not be able to see because I'm not familiar with what the other section is doing."*

In SPS, the User PM facilitated integration of the business requirements and coordinated users' consensus on the integrated blueprints. He was assisted by a team of representatives from each department who liaised between their departments, and him and his Accenture counterpart. As the User PM recalled, "*We tried to integrate in terms of process-wise, how each of these enhancement affects another group of people. ... So we had this big chart of everything. ... With the help of Accenture, I mean, they had an integration manager and a solution architect, we tried to map. ... We didn't meet with this function. I only meet with you. So we called everyone in the room, and we went through it all together. So everyone must have a certain consensus. ... So this thing went on for weeks."*

This resulted in shared blueprints for multiple departments that the respective Process Owners signed off together upon reaching a consensus on what to include in them. If consensus could not be achieved, the issue was escalated to the Working Committee or ad-hoc Steering Committee meetings, if necessary. This resulted in greater sharing of information between departments on what they did and greater clarity in terms of who was responsible for each business process. SPS staff began to have a more holistic appreciation of SPS and its business processes as a whole. As a Process Owner noted, "*[When there are different views] Try and understand their point of view because I think that, you know, they wouldn't insist on their way for, you know, nothing. ... So sometimes a question of ... how to accommodate what their needs are."*

Once the blueprints were ready, a development inventory was generated to list all the things that had to be done, but this list was three times longer than what was expected and what Accenture was contractually obligated to handle. As the IS PM put it, "*When they list all these things, they run through with the big bosses because the numbers was so huge, that even Accenture wants to see the bosses because there's no way they can do this because contractually ... I'm just giving you an example. So contractually, I'm supposed to do forty. So how can I do forty when there's hundred and twenty?"* The Working Committee Chairman met with Process Owners and process experts from each department to justify their requirements. However, everyone said that most of the requirements were essential and could not be discarded so the Chairman asked them to prioritize their list into two phases, such that less urgent ones could be

deferred and handled during post-implementation. A sizeable number of requirements still remained.

It was then noted that several requirements overlapped with items that existed in CMS. Thus, the decision was made for internal IS staff to alter them as re-use items for EBS, while Accenture developed the remaining items. Approximately 40%-50% of the requirements eventually comprised of re-use items. This thus became a joint project as internal IS staff were seconded full-time to work on the re-use items. Process Owners and project team users then conferred with general users on the proposed solutions before deciding whether to accept them. For any outstanding misfits that could not be resolved, the Working Committee Chairman decided what to do after gathering necessary input from all relevant stakeholders.

However, the Process Owners still hesitated to sign-off their blueprints. The MD discovered that it was due to a lack of face-to-face discussions between SPS and Accenture staff, which created a bottleneck in resolving blueprint misfits. Thus, he made both parties meet face-to-face more regularly to resolve their issues. As the MD described, "*I said, "Why are you all taking so long? Why can't you sign off?" ... "They [Accenture] didn't understand what I was talking about." So I said, "How did you tell them?" Then I realized, again, there wasn't a face-to-face discussion. ... The consultants took notes during the discussions, and then went back and write. Then after that, hand over. Read some comments back. He change, send it back ... So instead, I insisted,*

the consultants come, present, walk through the documents? ... Make sure they understood, make sure the user agree."

4.2.3 Realization Phase

4.2.3.1 Functional Design

The first key activity was to prepare detailed technical solution papers based on the BPDs that described how the system would be configured to meet users' requirements. These solution papers were then translated into the functional design (FD). Initially though, there was a lack of clarity of the roles and responsibilities of the various stakeholders. As the IS PM recalled, "*When you got joint, you got advantage, you got also disadvantage. Because the roles and responsibility becomes not clear. ... Say for example, they felt that, "I'm a user. Why must I write technical specifications? I'm not trained to write technical specifications." But because Accenture will run it like you are in the project ... These are things that have to be very, very clearly spelled out upfront."*

Consequently, the Working Committee Chairman and Accenture PM clarified their roles and responsibilities, and several project team users and consultants were assigned to prepare the FD specifications. The users were unprepared for this task due to its technical nature. However, Accenture felt that since these users were seconded to the project team, they should partake jointly in all team activities, including preparing FD specifications. As a project team user recalled, "*We are expected to do functional designs. So that was a struggle for us. ... To learn the program, to learn about tables and stuff like that. So initially was quite frustrating. Couldn't understand why we should do it."*

Again, top management stepped in and encouraged the project team users to treat this as a learning experience. Accenture staff also conducted walk-through sessions to explain to the project team users the objective of the FD document and what it should entail, although there was no explicit training on how to write the documents. Final approval of the FD documents remained with the departments as the Process Owners had to sign-off against the designs.

At this juncture, Accenture staff had limited understanding about SPS' business, unlike SPS users and internal IS staff. As the Working Committee Chairman elucidated, "*The issues we have, at the functional design stage, is understanding and interpretation because our business is unique. In fact, we are the only utility in the world … that provides truly consolidated billing for all utility services. And again, we are the only utility in the world that has so many different principals."*

Users were initially reluctant to spend time educating the consultants because they felt that the consultants should already have this knowledge. However, top management highlighted that this assumption was erroneous, as consultants would usually be well versed in package knowledge and picked up the relevant business knowledge on the job. Consequently, users, particularly those in the project team, actively educated the consultants on the intricacies of SPS' business processes.

Internal IS staff educated the consultants on the fit between SPS processes and CMS. In turn, they learnt about project management, documentation and

features of the new package. The User PM expounded on this collaborative learning, "*What was good is also because our own IT colleagues were part of the project team, and because they brought with them the past five to six years. They also know the peculiarities of the system and what to look out for. They can also advise even Accenture, because ... not all of them are even as experienced as our own IT colleagues ... they have been maintaining this system for the past five, six years.*"

Subsequently, the consultants, and in particular the team leads, were better positioned to advise and clarify any doubts that the project team users had, as they could describe the features of the package, explain how these features fit SPS' business needs, and suggest how misfits could be resolved.

4.2.3.2 System Development

System development was divided into two parts: Accenture customized the SAP package and internal IS staff handled the re-use items from CMS. At this point, the Accenture PM effectively managed the project with the Working Committee Chairman. As the Accenture PM elaborated, "*[Working Committee Chairman], she is the chair ... So if she don't chair, I [Accenture PM] chair, right? So I mean there were a few times I told [the Working Committee Chairman, "Sorry, I don't think we should do that". And she actually took it.*"

While coding was handled by the consultants and an offshore team in India, the users seconded to the project team had a role to play in system development too. For example, they explained the FD specifications to the

team leads who informed the developers, or they liaised directly with the developers. As the IS PM explained, "*Sometimes the staff do the functional specs. ... Sometimes ... they themselves have to explain [to the developers]. ... If everything goes through the team lead, again, there will be one more channel of [miscommunication].*"

Sometimes, it was challenging for project team users to liaise with the developers in India since discussions were held via telephone or email. There were cases of miscommunication and project team users were frustrated at continuously re-explaining specifications to the developers and then receiving a system that did not exactly fit their needs. This was partly due to a clash between the tighter technical languages of the developers and the slightly broader business terms used by SPS staff. Accenture alleviated this problem by bringing some coding work back to the Singapore team, flying in developers from India to temporarily work in Singapore, and getting team leads to liaise between the two parties.

At this same time, internal IS staff focused on porting over the re-use items from CMS. To facilitate this, they liaised with the users to confirm how the business processes should be operationalized. After gathering their input and posting over the re-use items, the internal IS staff informed Accenture so they could update the documentation. During this process, there were a few cases of misfit between the system developed by Accenture and re-use items ported over by internal IS staff, so they held discussions to work out a compromise.

Otherwise though, there was little interaction between Accenture and internal IS staff during this phase.

Concurrently, fostering closer relationships among internal and external project team members became more important. For example, the Accenture PM budgeted for consultants to bring SPS staff out for lunch every month, while he did likewise with his team leads. A weekly newsletter was disseminated to the entire project team to provide project progress updates and social trivia, such as information on newborns of team members. Top management encouraged get-together activities among staff from SPS, Accenture and SAP. The result of getting team members to bond and proactively assist each other though, took time to be realized. As the Working Committee Chairman recalled, "*You have people from different cultures. ... It's like United Nations, you know, because you have people from Australia, Malaysia, China, India, UK, Germany, South America, Chile, and so on. And of course, Singaporeans. So, you have to do things to force them together. So, it was Chinese New Year. ... So we get somebody, calligrapher, to come and write a couplet. And we write a couplet on teamwork. ... It's a lot of fun."*

4.2.3.3 Mock Conversion

System development coincided with the first of seven mock conversions, which simulated and prepared everyone for the actual data conversion exercise during go live. A team of consultants managed these mock conversions and conversion specifications were derived from the FD documents.

During each mock conversion cycle, the consultants identified what data they needed and informed internal IS staff from the SPS IS extraction team. Given the size and complexity of the database, which held about 13 TB of data, actual data rather than simulated data was used in the mock conversions to ensure greater accuracy and realism. The internal IS staff extracted the necessary data from CMS and passed it to the consultants who transformed the data and loaded it into the new system. Users conducted data verification and eyeball checks of records to ensure the data in the new system tallied with the data from CMS. As a Process Owner summarized, "*They try to simulate the real conversion, whereby they pull out all the data from the old system, put it into a new system, and then users have to come in to do what they call eyeballing, data verification, make sure that the data, randomly sample, the data is accurate as what was put out previously. So at that point in time that's where users were really, really involved."*

To speed up the process, objects for the new system were loaded against a 24 hour clock so users sometimes returned to office in the middle of the night to verify data sets. A complete cycle lasted four to five days. To facilitate this, departments divided their staff into multiple teams to work in shift rotations during the 24 hour cycles. As a Process Owner explained, "*This is like the kind of funny timing, because the schedule for conversion is such that ... they work 24 hour clock. So meaning that if my object is loaded in the middle of the night I have to send users to come back and verify it middle of the night."*

This exercise was coordinated from a centralized command centre. A consultant or SPS staff from the project team took turns to man the centre. When faced with a conversion issue, general users informed their respective Process Owners who informed their team leads and the person manning this centre. The team leads then updated the data conversion team so they could look into the issue. Concurrently, the person manning the centre conveyed the message to all affected parties. For example, if this issue resulted in a delay in the conversion cycle, the person in the command centre would notify the Process Owner of the next department so they could inform their staff not to go to office too early. A series of checkpoints were identified prior to each cycle and upon completing each checkpoint, a meeting was held between project team members and Process Owners to discuss and resolve any outstanding data conversion issues.

During the initial mock conversions, the general users were narrowly focused on their respective departments' needs. Since this was their first direct interaction with the project team, they were slow to raise issues to them and were taken aback at the workload demanded of them during the mock conversions. As a Process Owner elaborated, "*We had to like change the mindset of our users that this is a phase which is actually determined by computer runtime. ... They can give is a rough timing but they cannot tell you exactly come back at 6pm ... So users had to be flexible in the sense. ... I think the first round, they were quite taken aback at this whole thing because I think none of us had gone through this kind of thing. ... By the second and third round, they were actually getting into the swing of things."*

Top management staff, particularly the Process Owners, had to motivate their users. There were numerous stories about Process Owners looking after the welfare of their staff by accommodating their needs, purchasing refreshments, and going to the office late at night to check for outstanding issues if their staff were working late. In addition, top management clearly articulated to general users on their roles and responsibilities prior to the mock conversions. Consequently, the general users become more receptive to the flexible workload demands during the conversions. As a Process Owner recollected, "*[During mock conversion] It was being brought forward until 4pm. ... So suddenly I have to change the manpower. ... So I had a hard time calling the staff. ... Some of them say, "I just step into the MRT." ... "Can you come back?" ... "Okay, I come out the next stop." ... Some they have already gone quite far already. So they come back."*

General users began cooperating more closely with one another during these cycles. They sent SMS to one another as reminders about duties and to arrange to meet in central locations to share a taxi to office, particularly late at night. Several staff even proactively contacted the command centre to find out when they had to go to office, rather than passively awaiting their calls.

During this process, general users started to better appreciate how their business processes and system features were inter-related with those in other departments. This was evident in various ways. When manual eyeballing of records was required as part of data verification, general users from different

departments were less reluctant to chip in to help. Likewise, knowing that the next stage of mock conversion depended on the swift completion of their data verification, they worked extra hard to ensure they completed their tasks within the time allotted. As a Process Owner expounded, "*They actually brought their sleeping bags. ... Then they stock up food. ... I guess you really see the other side of them and for what purpose? I mean at the end of the day it's for the whole project. So I mean it's this commitment that you only see it when such things happen. ... And it's only when you see everybody putting in such effort, then you realize it's worth it."*

4.2.3.4 System Integrated Testing (SIT)

After developing the system and two rounds of mock conversion, the project team, led by Accenture, unit tested each module before initiating three rounds of System Integrated Testing (SIT). At this juncture, the Process Owners and general users were not involved unless necessary changes were identified to maintain the integrity of the integrated system and the Process Owners were approached to discuss how such changes could be enacted. Even internal IS staff was not involved as they had passed on the completed re-use items to the consultants to be integrated with the rest of the package.

A common database helped track all issues from SIT, and it was accessible to all relevant stakeholders so they could keep abreast of the progress. As the User PM stated, *"What was good that ... there was a common database to keep track of all the issues. ... It's not only so called reserved to the [Working Committee]. In fact, the users, the Process Owners, the team members they*

can all access this database to look at what is the progress. ... Because we found in SIT this was good, we requested for a duplicate for UAT ... Parallel run was the same."

This approach was taken as this testing focused more on the technical integrity of the integrated system to support SPS' inter-related business processes and inter-branch transactions. SIT thus entailed running end to end transactions to ensure the entire system flowed smoothly. SIT enabled cross-checking of the consistency of the integrated system and helped smoothen out any non-clean data in the system, such as those arising from previous inconsistencies in processes. Moreover, SIT fostered greater confidence in project team members, particularly project team users, as it provided a first glimpse at the holistic system. As a user recalled, "*When we're doing SIT, I was more confident. ... Because that's where I get to see, okay this function, you know, working with another function and how it works. So I get to see the whole thing."*

4.2.3.5 Preparing for Training and Testing

They also began preparing the system trainers. Trainers were appointed by the departments and the consultants prepared them to train their peers prior to system go-live. Most Process Owners selected their User Acceptance Testing (UAT) testers to double up as trainers, as they felt that staff that underwent UAT had the relevant knowledge to train other users. The User PM elaborated on the rationale for getting each department to appoint their own trainers, "*Because of what they felt comfortable with. Because like for example, customer service, and you know our call centre, they can't be trained during*

office hours because they have certain operations to do, whereas if you are in the back room you can spare certain time or certain resources to go and do training. So it really depends on their operational needs as well."

A key component of this involved the trainers preparing the training materials. Accenture walked the trainers through the system designs and solutions so they had a holistic understanding of the system. The consultants also coordinated their preparation and the consistency of training materials by providing trainers with templates and educating them on how to prepare the training materials. The completed materials were reviewed by the Process Owner and functional teams to ensure accuracy. As the Accenture PM said, "*[For training] we came up with the structure, we came up with the modules, we design the modules, etc., we come up with templates and everything. But the physical content is done by SPS people."*

One challenge was staff gathering the content for the training materials from screenshots of EBS. Since this occurred in parallel with the realization phase, EBS was not fully developed. Thus, the consultants' briefings were often limited to using the business process definitions and FDs rather than the actual system. Despite this, Accenture felt that it was prudent to prepare for training early to prevent delays in training the users. Furthermore, they felt that the training documents were living documents as work on the system continued until just before go-live so it was futile to wait for a complete system before preparing the materials. However, as a Process Owner stated, "*Maybe at that time the development have not come out yet. So that's why they don't have the*

actual screen to show them. They only train them on okay, what are the BPD, what are the solution paper, and what are the changes and so. ... They feedback to me that, "Yeah, like that how do we know? What are the screen? Never see it." So all our trainers have to put in extra effort to go to the system to try out themselves."

This phase also saw the start of preparation for UAT, as Process Owners selected their testers from among key users mainly at the supervisory level, as they were more experienced and had the knowledge to prepare more comprehensive scripts. The testers gathered input from general users to prepare the scripts. Where necessary, they also got input from other knowledgeable parties, such as the MD, top management, consultants and internal IS staff. Final approval of what the test scripts entailed rested with the respective Process Owners who vet the scripts to ensure that they were detailed enough. As the Working Committee Chairman recollected, "*We have 2,000 over scripts. ... Even planning of the UAT is yet another big thing because there are so many things to be tested. You want to test the individual functionality. You also want to test integrated scenario. And then in our case, you want to test billing cycles as well."*

4.2.3.6 User Acceptance Testing (UAT)

During the UAT, general users were heavily involved and had a bigger say in managing the project, while the consultants and internal IS staff focused on fixing problems with the system that were highlighted. Although they had contributed slightly during the blueprint phase, their role then was limited and

indirect, as their views were filtered through the project team users and Process Owners. Their involvement at this juncture was more crucial as they were most familiar with SPS business processes and could best assess the fit between the system, and SPS and their requirements. As the IS PM put it, "*"User testing is user testing." ... Because for an IT person, how we test. We test according to our logic. ... I may misinterpret your requirements. So only you as the business person will know."*

The Process Owners assigned staff to test the system according to the test scripts. They were assisted by the project team users who were familiar with the system as they were involved in the project since the beginning, and they were colleagues and thus understood how the testers felt and how best to approach them or filter their feedback to the consultants. Representatives from the principals also participated in the UAT given their familiarity with the principals' requirements.

Initially, the testers focused on ensuring their needs were met. This was partly due to their lack of understanding and awareness on how business processes were inter-related with downstream or upstream processes. This was addressed, as the testers began integrated testing. As a Process Owner mildly put it, "*To balance the unit testing with integrated testing, I think, was quite a challenge."*

A team with representatives from each department was set up for integrated testing. General users were initially reluctant to conduct integrated testing, as they felt this was beyond the scope of their department functionality. Several

steps were taken to overcome this resistance. Holistic buy-in was sought from Process Owners. As a Process Owner described it, "*Most of all, that Process Owner must believe that, or must want that project to work because that person ... must be accountable for the project as well. ... If he doesn't even believe why you should be doing this then I guess gone case. He will always look after his operations."*

These testers helped prepare the integrated test scripts, which were vetted by the Process Owners. This was coordinated by the User PM with help from the Accenture SI Manager. He liaised with departments via their representatives in this team. He used a spreadsheet to consolidate and track all the inter-related business processes and integrated system features. As the User PM noted, "*As a user project manager, then of course, one level up, I have to look across all the Process Owner and I need to gel their requirements together. So I was sort of like the end to end from the SP Services side ... Accenture will have their integration manager so I'm his counterpart basically."*

General users began to take greater ownership of the system. They began to show greater commitment to the project and were motivated to see the project succeed beyond the parts relevant to their needs. As a Process Owner recalled, "*Maybe I think the ownership that the staff took of the project as it went along? Initially I would think I wouldn't really see that level of commitment. Most of the time [initially] I would be the last one to leave the office during project, but I noticed there were days [from UAT onwards] when they actually stayed behind even though I was leaving. ... So to me that showed quite a high level*

of commitment." Testers also went beyond the test scripts and tested additional scenarios to better assess the system, even if it meant staying late after work or going back over the weekend. These users became more independent when faced with issues with the system and they discussed the issues directly with the relevant parties. Several users even proactively raised issues on behalf of other parties if they noticed something wrong. Finally, they became more willing to accommodate misfit resolution strategies raised by the consultants even if it did not favour them and they needed to employ workarounds, as long as it benefitted the system as a whole.

While general users tested the system, coordination of UAT was handled by the Process Owners and project team. However, UAT encountered delays in resolving the issues raised in testing. As the MD described, "*I do testing, I hit an error, I record the information in the system. The consultant will go in, look at it, okay, do his analysis, come back and say ... "We will change it." ... Once he has changed it, he will come and update this, "Oh, changed already. Please test." ... What is wrong with this arrangement is the people don't talk to each other ... "Do you know the status?" ... "Oh no, they haven't updated the status so we didn't test.""*

The MD thus pushed for more face-to-face meetings to resolve these issues. These daily prayer meetings were held every morning and involved relevant Process Owners, testers and team leads. To facilitate the smooth resolution of issues, the consultants introduced a System Investigation Report (SIR) database, which was the official channel for reporting issues raised during

testing. So, when testers faced an issue, they raised a SIR and informed their project team users and Process Owners. Process Owners then began discussing these issues first to resolve them. Failing that, the issues were escalated to the team leads who flagged the issue to the developers, conversion team or internal IS staff accordingly. If the issue involved multiple parties, the Accenture SI Manager sometimes called for a meeting with the affected departments to resolve the issue. If it could not be resolved, it would be escalated to the Working Committee. As a Process Owner described, "*[When we raise a change request] first of all there is some ... negotiation, because different people can have different points of view. They [Accenture] may think it's not within the requirements but we [finance] think it's within the requirements. ... The Working Committee was, I think, quite helpful in that sense. You know, like, it's like an arbiter to decide how to proceed."*

Due to their close proximity, testers could informally directly approach the developers or consultants. Testers though, sometimes tried resolving the issue themselves first before escalating it. Affected Process Owners also met to discuss integrated issues and pass their summary to the consultants. As a co-Process Owner explained, "*All the coordinator have come together daily to meet and then we compile all our findings, our summary and then we will just report to Accenture. ... A summary of what are the, all the issues, and what closed, what is in progress, what not in progress, for all the different integrated scenarios."*

Top management still had important roles to play since SPS was beginning to take ownership of the system. The Working Committee began weekly meetings where everyone shared their progress and issues encountered. This fostered greater understanding of the project and system. Top management mediated during discussions to resolve issues escalated to the Working Committee meetings, and they sought to strike a balance between package features and organizational functionality. As the User PM noted, "*We try to come to a common consensus of what is good for the company. ... Definitely you may not get 100% consensus but I guess a decision eventually has to be made and that decision has to be made with all the information available and felt that this is best way to move on."*

Top management even facilitated collaborative problem solving. For example, sometimes the Accenture PM or Working Committee Chairman raised an issue beyond the scope of the original contract. After further discussion, they reached a compromise that benefitted the project and system as a whole. Another challenge was to rekindle flagging user motivation due to the long project duration and seemingly never-ending cycle of testing and issue resolution. One approach was for top management, such as the MD, to hold internal meetings with SPS staff to understand their concerns, particularly concerning the working relationship with the consultants. Likewise, the Accenture PM held similar internal meetings with his consultants. These top management staff then met to address this feedback, rather than risking potentially confrontational sessions between the staff and consultants. As the Working Committee Chairman recollected, "*Because it was a long project,*

there were times when people were ... "Why can't we finish acceptance testing?" ... They were probably, sort of, tired of the fact that they had to keep on retesting. ... Staff motivation. Our own staff, who keep thinking that, "Hey, why can't the consultants get it right the first time?" The consultant staff, also, "Why can't the users understand?""

4.2.4 Post-Implementation Phase

4.2.4.1 Closer Relationships

Entering this phase, the relationships within SPS, and between the consultants and SPS, were noticeably closer. Regular interactions during the project had fostered a closer working relationship among them, and in some cases, had blossomed into personal friendships. As the Working Committee Chairman put it, "*Even now, you know, the Accenture, I mean, we are friends not because, not just because it's a successful project. But because we all put so much in it, there's, you forge a relationship and to me it's very valuable."*

One reason for this was the shared understanding that they developed, particularly in terms of the project objectives. This contributed to everyone aspiring towards the same goals and that was to ensure the completion of the system for the overall benefit of SPS. As the Accenture PM noted, "*I think towards the last six, seven months, it was very good feeling because we'd come to the stage where we're not squabbling over little things. ... People just want to make it happen, and that's what is important to the success of a project. It took us quite a journey to get there. ... It comes with a bit of clarity*

perhaps. It comes with people who say, "Hey, I'm all on board for this. I really want to be part of this success.""

This closer relationship was also a product of the collaborative efforts of all stakeholders to complete each activity and phase of the project, as each milestone provided a sense of progress and anticipation of the project completion. This led to insight among SPS staff that the system belonged to them and successfully implementing it ultimately benefitted them as well. This was crucial in facilitating the activities in this final phase. As the User PM summarized, "*I guess as time move on, I mean we felt, of course, that it's best to collaborate. I mean, no point always drawing lines because at the end of the day, this system belongs to us."*

4.2.4.2 End-User Training

As this juncture, training of SPS staff commenced. SPS waited for the completion of most of the system before starting the mass training exercise. Training was handled by SPS staff, as trainers who were previously trained now trained their peers. In some cases, the trainers personally trained all their peers in their sections, while in larger sections, multi-tiered training was employed as trainers trained a select group of staff, who then trained the rest. If staff had doubts, they could directly approach the consultants or internal IS staff for clarification. There was also inter-department training for staff that wanted or needed to better understand the holistic business processes and system features. As a Process Owner explained, "*Sometimes we also need to cross train ... Let's say they want to learn our module, they want to understand*

our functionality, they got to come and undergo our training ... That's why before the training start, we got to identify our people, what module to train. ... Then of course I [Process Owner] got to consent on it. ... It'll be helping us in our work [i.e. related to our work processes]."

The training exercise lasted several months, as it accommodated the diverse working commitments of SPS staff. Staff though, was willing to accommodate the extended hours for training, as they understood why it was crucial for the project success. Then, prior to cutover, a refresher course was conducted to plug anything that staff may have forgotten and to cover any system features that were not ready during the initial training. A Process Owner described the exercise, "*Training took place over like one, two months [for my department], and it's because our operations is done after office hours. ... We also gave the trainers, where they don't need to do testing that day we say that you can come into the office later. So that the trainers don't end up always working like their normal operating hours plus OT [overtime] for the training."* Training consisted of a lot of hands-on practice, as staff was encouraged to try out the system during the training and on their own after training. This boosted their confidence so when the system went live, they were less worried as they had experience in using it. The teaching notes were also easily available via a common online portal that staff could access at any time, such as by customer service staff while waiting for customer calls.

4.2.4.3 Preparing for Go-Live

Preparation began for the go-live action plan and blackout period for SPS services. The blackout period was the period prior to and during go-live when non-essential SPS services were suspended to accommodate moving live data from CMS to EBS. The decision to have a blackout period was made by top management. The Accenture PM explained their rationale, "*The complexity is ... every time you go into the cutover ... you don't want to have things that you know that has moved and therefore you don't know. You always want to limit the movement. ... One of the gas [principals] ... was trying to change their meters as well. They [SPS] actually tell CityGas to freeze the changing of the meters as well because that impacts conversion as well."*

To facilitate this blackout period, each department came up with a list of services that could be suspended during this period, the period when each would be down, and the business activities they had to track or handle manually. The consultants consolidated the information and disseminated it to the departments. Meetings between inter-related Process Owners and key users were held to elaborate on the issues they faced and implications for affected departments. As a Process Co-Owner expounded:*"[If] we cannot do anything and we really need to manually handle by telling people not to do certain things, we will actually set up meetings, communication with the different users or Process Owners ... so that they understand the issues ... That does not only happen to meter reading. I mean, like, it also happens to billing, ICC. They will tell us, maybe don't do certain things for this month. Then we will have to manually, we will have to cooperate."*

Since suspending services affected the general population, plans were made to inform the public. SPS identified all customer service touch points and different groups of customers, and the materials required for each touch point and group. As a Steering Committee member explained, "*If you are a new customer we give you a leaflet ... or GIRO customers ... So, in the action plan, we look at the touch points, what are the customer service touch points and then each we identify the materials that we need to push out.*"

The go-live action plan began to be formulated at the start of the mock conversions and based on the BPDs, a procedure was devised on how to manage each process during cutover and mitigate risks. This plan was finalized at the start of this phase. One key issue addressed was selecting a go-live date, which was pushed back several times due to project delays and the needs of different departments. As a Process Owner noted, "*We have to decide what is a suitable date. ... We'll [our department] prefer not the first day because more people do the move-in, move-out on the first day and last day of the month. But well, in terms of the billing, they would prefer on the first day, because they want to have a clean cut, say that billing cycle close by this month. So at the end we got to look at what is the more impact areas, like what is hard to take care of?*"

The go-live action plan consisted of several checkpoints where the project team determined the implications if they had to roll back to CMS, and a point of no return beyond which it would be more detrimental to return to CMS than

continue with any issues that surfaced during cutover. The project team and Process Owners developed a fallback plan and got approval from the Steering Committee before Process Owners briefed their staff. A dry run of this plan was conducted to ensure it ran smoothly. Finally, a post-implementation plan was developed to identify what SPS staff would do after going live.

As with the blackout period plan, each department developed their own go-live action plans based on templates provided by the consultants. They uploaded their plans to a common online portal, and the project team consolidated them into a holistic plan that was maintained at the command centre. The action plans were shared with the different departments and combined meetings were held where the Process Owners explained what they would do during the go-live period. Process Owners also separately briefed top management on their plans so they could better understand how each plan affected SPS' overall operations. A Process Owner elaborated, "*Management also asked each Process Owner to brief them on what they would be doing during that period. ... To see if there's any major impact on operations. Maybe what one team is doing, the other team needs to be involved. Like, for example, if you're not collecting payments you're your customers during that period, we cannot have the debt management team calling people up to say, hey, why aren't you paying your bill, that kind of thing.*"

4.2.4.4 Dress Rehearsal

The culmination of the mock conversions was two full dress rehearsals. Each lasted a few days and emulated the full 24-hour cycles of the actual cutover

period. The intention was to familiarize everyone with the cutover process. The efficient execution of the dress rehearsals also fostered a greater level of confidence among SPS staff to carry out the actual cutover. As an Accenture staff elaborated, "*These are full dress rehearsals, 24 hours, as per actual cutover itself and we are using exactly the same detailed plan. ... So, really by the time it was cutover itself, everything is like clockwork, everyone knows what time they're roughly supposed to come in, they're familiar with the procedure, what's the communication channel, escalation process, who is supposed to reconcile what data."*

The dress rehearsals entailed communication between internal IS staff who loaded the data from CMS, the team conducting the data conversion and loading of system objects, and general users who verified these objects and data before updating the command centre and consultants. Where necessary, the project team users served as a first line of contact to answer queries from general users or to liaise between them and the consultants. Given the tight coordination required, a major challenge was getting everyone to understand the overall schedule, know that it was dynamically changing and be willing to accommodate this flexibility. As an internal IS staff elaborated, "*Any part could be falling, stretching longer or becoming shorter, because you just plan with a. ... approximate time. It could be faster than you expected. Then the subsequent activity got to speed up, you know. We may have told the user come in at 3am then suddenly this part is taking only maybe half an hour instead of the two hours that we anticipated. So the user, "Please come in two hours earlier." So everybody got to play their own part."*

The project team outlined the schedule for dress rehearsals and briefed SPS staff about it in advance. A central command centre was set up to coordinate the rehearsals and the person in charge tracked the completion of each group's tasks and contacted the next group in line with the master plan maintained by the project team. This plan was available on SPS' internal network so anyone could log in and be updated on the status of the dress rehearsals. In addition, there was a certain synergy among the diverse parties involved that enabled them to work closely together. As an internal IS staff said, "*If all of the team work together, there's certain type of synergy that, you know, people run late, they [the rest] still continue working until one or two o' clock in the morning. ... And that can only be achieved by people that can work together."*

Commitment to the project was evident in other ways. While the dynamic schedule led to several staff turning up earlier or later than required, there were no absentees during the dress rehearsals as everyone was dedicated to completing their designated tasks. Similarly, the verification exercises should be conducted by the general users, but sometimes when they worked late through the night, the project team users voluntarily stayed back to assist their peers, as everyone shared a common aspiration of successfully completing the tasks. As a user put it, "*They [users in project team] also come back for the night. They were not supposed to be the one doing it. ... So it does help that you don't draw lines in that sense."*

4.2.4.5 Parallel Run

In conjunction with the dress rehearsals, two parallel runs were conducted. Each simulated a three month SPS billing cycle compressed by half into about one and a half months. The project team wanted to test all SPS activities with all their accounts during these runs but this was not feasible due to the wide range of activities and volume of over a million accounts. Thus, the parallel run focused on a few key activities and was limited to about 30,000 accounts.

The parallel runs were managed by the internal IS team, led by the IS PM. Top management felt that the additional cost of getting consultants to manage this was unnecessary. Also, the IS PM felt this was an ideal opportunity for her internal IS team to familiarize themselves with managing the system during post-implementation in a less stressful pre go-live environment. As the IS PM explained, "*To me, the team [internal IS] has to get ready to do production. ... You might as well just try it out. Because you're not under so much pressure. It is still a parallel run. The volume is not that high because they selected thirty thousand accounts. So in that sense, you can still manage it."*

They thus ran the exercise like the actual production environment and set up a helpdesk to assist general users. General users could formally log issues in the SIR database or informally directly contact internal IS staff. If it was related to a re-use item, the internal IS staff handled it. If it involved a new system feature, they informed the consultants. An internal IS staff recalled, "*If they [general users] ... let's say the batch run, run in the middle of the night and they hit a problem and they call us [internal IS]. End of the day it could be*

some new module developed that causes it. So we have to call them [Accenture] then they may have to look at it. ... They are quite fast in turnaround."

Given the tight compression of the full three month cycle, all staff was expected to work late hours and even on public holidays, if necessary, during both runs, as these tasks were done on top of their usual work during office hours. The principals were even invited to send representatives to participate in these runs and verify data related to their respective processes. Eyeballing checks were also conducted on print-outs of the final bills during this exercise.

To alleviate concerns that staff may have with this gruelling schedule, Process Owners educated their staff about the necessity of these runs and how the data they tracked facilitated their operations and provided a buffer in case they needed to roll back to an earlier stage in the run. As a Process Owner expounded, "*To the staff it's like, you know, "Why do you want me to keep track? Nothing is happening now. Why do you need to keep track?" So you have to show them the whole total plan, and then you have to explain to them because we need these two days transaction if we roll back, because of that, now you don't know whether you roll back right. ... It's like buying insurance."*

Staff was generally willing to collaborate with each other and contribute what was required for the project once they understood the big picture. This was evident when mismatched processes and features were identified during the parallel run and staff worked together to ensure the run continued smoothly and there was no *"show stop"*, as one internal IS staff called it. In total, all the

testing, including the mock conversions, UAT, SIT, dress rehearsals and parallel run, lasted about eleven out of the twenty-six month project.

4.2.4.6 Pre Go-Live Final Knowledge Sharing

Before the actual go-live, a series of knowledge sharing activities occurred. About one month before go-live, several top management staff, including the Working Committee Chairman, visited an Australian utility that had just underwent a cutover for a similar system, and was deemed a success by the utility and Accenture. However, upon closer analysis, they realized that the project still faced several problems after go-live.

While not major, in the eyes of SPS, which had a much lower tolerance for failure, this project was not as successful as had been portrayed. SPS top management thus learnt valuable lessons on how to fine-tune their own cutover and consolidate their contingency fallback plans. This bolstered the confidence of the project team and SPS as they approached the go-live period. As the Working Committee Chairman elaborated, "*I speak of course to the management [in Australia]. ... They tell you all the good things. ... I interviewed the managers. Oh, then that's all the problems come out. ... The problem is that because you had that experience, all the eyes, the press were all waiting. ... That's why, in our case, we cannot afford to have any problems. ... I brought back one valuable lesson. ... Everybody focus contingency plan from an IT. ... But the contingency plan on operations? What if systems slow down? What if the staff not familiar? What if, for some reason, it took more time? ... We actually didn't have to activate any of this. But I*

think it's good, it's useful, it's a good discipline. And in fact, it gives confidence."

The MD also met the board of directors to update them on the cutover. Likewise, the MD held road shows for SPS staff to update them on the cutover, and cement their commitment and buy-in to EBS. Staff from Singapore Power Group was also updated in several issues of the electronic company newsletter just before cutover. Top management staff briefed the principals and government regulatory bodies, such as EMA, prior to cutover too. Finally, SPS proactively updated the general public of the service blackout period via several channels, such as their Customer Service Centre, posters, leaflets, newspaper advertisements, online FAQs, the SPS website, and pre-recorded messages on their interactive voice response system for their call centre. As a Steering Committee member emphasized, "*So basically it's like things that go out and we need to push out a consistent message."*

4.2.4.7 Go-Live

The go-live period lasted one week. It was coordinated from a central command centre manned 24 hours daily by project team members to track the progress of go-live activities using a consolidated spreadsheet that listed all the activities that should occur. As each activity occurred, each person responsible physically updated the person manning the command centre and crossed the item off the list. Timely and disciplined execution of activities was of paramount importance. The Working Committee Chairman recalled, "*S-called it's a command center. It's really like a war room. We have charts and so on.*

Getting ready for problems to happen. ... We put every activity, the cutover plan, from there all the way. Can you imagine? Those A5 spreadsheets, all the way [across the wall of the room]."

Daily checkpoint meetings were held by the Working Committee and key project team members to discuss the cutover and approve progress to the next stage. Also, consultants and internal IS developers were on standby to ensure speedy resolution of issues. SPS even arranged for technical staff from their vendor, HP, to be on standby to resolve potential hardware problems during the cutover. As the Accenture PM explained, "*There was this team of people sitting there. So we want to mobilize people, do some queries, check the system, status check, then we have some people sitting there, trying to understand what is the problem. ... Then we have a picture and we say, "Look, this is how we're going to solve it." ... It's a mix of people. But they have duty roster."*

The project team users were called super users. They walked the floor and were easily accessible to the general users as the system went online so they did not have to search far for someone to help if something went wrong. The super users were the first point of contact for resolving issues given their familiarity with the system. If they could not help, the issues were logged in the SIR database and they liaised with the relevant consultants or internal IS staff. It helped that the general users were prepared to efficiently conduct the cutover. As the Working Committee Chairman put it, "*I don't have to go around, you know, frantic. In fact, it was like, business as usual. ... What I did was just walk around the aisles. ... The people knew what to do. Not just the*

manager. Because they are prepared. ... So, I said, "Oh, it was a bit slow." They knew straightaway, okay, I need to log, first thing. So they don't need to go around, "Eh, how, ah? How, ah? What do I do?""

The culmination of this was eyeball checks of the final bills that were printed before went out to the public. Although it was impossible to check each and every single bill, SPS remained risk adverse after the CMS experience and decided to print all the bills from the first few days and conduct a sample check. Although only a subset of bills was checked, this was challenging due to the volume of bills involved, as an estimated forty-five thousand bills were checked. While the consultants admitted that this was not essential, as the Working Committee Chairman succinctly noted though, "*To us, why is it significant? It's not so much about a mistake, but because when it comes to bill, it's the integrity, you see."*

This exercise was coordinated by the billing department as they owned the process. However, they had insufficient manpower so the MD mobilized about 400 SPS staff from all the departments to help. Billing staff trained these staff on what to do and check. All the SPS staff were committed to helping in the checks and even agreed to return during the National Day weekend holiday to conduct the checks. As a Process Owner noted, "*[What impressed me during] Go live, I think it's the way the people rooted together. Like when they said billing is the critical thing on go live, everybody, I mean from other sections. ... Even though it was at odd times, you have to come back."*

Furthermore, while the billing department clearly defined the items to check, the SPS staff was so motivated that they proactively searched for other errors. This diligence paid off, as an error was spotted in a bill where the customer was wrongly credited. This error was quickly highlighted to the developers and swiftly rectified. Another error spotted was the formatting for the name of an overseas bank used by a handful of customers, as the name exceeded the usual length for bank names. Again, this was something that was not initially checked but it was identified due to the extra diligence of the SPS staff, and this too was swiftly rectified by the developers. In general, though, there were no major errors detected and the cutover concluded smoothly.

4.2.4.8 Post Go-Live

The Working Committee still held ad-hoc meetings to discuss unresolved SIRs raised during the project or new SIRs raised during daily operations and the SIRs database was retained to manage these issues. As for the non-critical requirements from the original BPDs that were delayed to phase two, one advantage of the delay was that several requirements were no longer required. As the Working Committee Chairman elaborated, "*The good thing about doing it that way is that after cutover then you realize actually some of the things that you thought you needed, you don't need it anymore. And then instead, there were other new things that because now that you're more familiar with the system, you need to enhance. So ... sometimes, don't go for everything one shot because some of the things you may not need and some of the things that you need, you may not know."*

The consultants who were involved in the project continued to address the issues for SPS for three months after the system went live as part of their contractual obligations. After this period, maintenance of EBS was handed over to internal IS staff under the auspices of the project's IS PM. By this juncture, the internal IS staff were equipped to maintain the system because they developed the re-use items that accounted for almost half of EBS, and they had picked up knowledge from the consultants by working closely with them throughout the project.

The new EBS provided many benefits to SPS. From a technical perspective, it improved batch processing, as for example, bill print jobs took four hours in CMS but only two hours in EBS. Its features were more flexible. It was easier to troubleshoot problems and collect report statistics. Storage utilization improved, as monthly storage growth reduced from 300GB to 200GB. Redundant processes were removed, new functionalities were made available, and heavy customization in critical CMS processes was reduced.

From a user perspective, EBS was more user friendly and responsive. It increased processing efficiency. The time taken to conduct certain checks was reduced. Whereas in the past, staff sent manual replies to customers for certain Internet applications, these were sent automatically in EBS. Staff more easily tracked action taken by others on cases, and monitored and accessed customer information. The volume of implausible reads for manual intervention dropped.

The implementation of EBS also generated several less tangible benefits. There was greater clarity in terms of ownership of business processes. Users had more in-depth knowledge about the systems, its features, and project implementation tasks, such as writing BPDs and FDs. In addition, users developed a deeper understanding of the roles and responsibilities of each department and how they were inter-related, both intra- and inter-department.

This better equipped them to identify new system issues, raise them to internal IS staff and coordinate with them to resolve the issues with minimal supervision from Process Owners. As a Process Owner proclaimed, "*It's really much better because the staff understands the whole thing. ... The staff would see this problem ... They have called the IS who is supporting us and they have recommended this and this. Then, at our end we will ask, "Okay, so how many such cases have this?" Now they will have all the answers that you want. ... At least they don't sound so panicky. ... And when I said okay, you can put up this change request, and they will be able to follow through."*

Users could also discuss issues with staff from other departments due to their shared understanding of the system and each other's business processes. They were better able to identify new add-ons that benefitted the whole system for their own or another department. An internal IS staff gave the following example, "*It could be some meter-reading they cannot upload, or they upload already, they hit some problem ... [or] come to billing they hit a problem. ... They may realize, "Okay, these are the things I want in place. It will help me. So can you do it upfront at meter-reading, and try to automate that part.""*

Internal IS staff then discussed the issues with users before analyzing whether it was technically feasible, and if not, what alternatives could be used. Users were better equipped for such discussions, as they had greater knowledge about the system and what it could and could not support. As a Process Owner said, "*Now that we are using the system, IS say that no you cannot do this, you can say that no I think you can do this. ... She say no, you can do this, why don't you use this exit, this and that. So I think that is the good thing."*

In general, SPS staff felt that the EBS project was conducted smoothly, and beyond some minor fine-tuning, there were no major outstanding issues. Thus, once the system stabilized, SPS was well positioned to leverage off EBS to reengineer and improve their business processes. As the MD (Media Release, 2008) reported, "*After several months of careful planning and hard work, I am glad that the efforts have resulted in a smooth migration to the new billing system. ... The upgraded system provides a firm platform to enable SP Services to improve its quality of customer service and cater to future business needs."*

5 Within Case Analysis

The within-case analysis of Republic Polytechnic's LEO and Singapore Power Services' EBS system implementations revealed that successful facilitation of OPS fit during an ES implementation depended on the interaction of the stakeholders of the ES and efforts of a leader suited to manage the situation (Fiedler, 2005). It was revealed that during each of the three phases of implementation – planning, development and post-implementation – a

different aspect of facilitating OPS fit motivated the activities in that phase and how the stakeholders were managed. Effective response to this motivation appeared to be contingent on the appropriate matching of managers' leadership styles, and contingency variables affecting the control and influence of the situation (Fiedler, 2005; Mitchell et al., 1970; Utecht & Heier, 1976). A focal contingency variable was identified in each phase, and symbiotic links between this focal variable and the other contingency variables were established. The leadership styles and links between the contingency variables varied across the three conceptual project phases.

5.1 Key Contingency Variables

From the within-case analysis of the two cases, it was seen that stakeholder power (Fiedler, 2005; Fiedler & Garcia, 1987), knowledge (Birkinshaw et al., 2002; Mitchell et al., 1970), inter-relationship (Fiedler, 2005; Friedman & Miles, 2002), and identity (Flynn, 2005; Rowley & Moldoveanu, 2003) were key contingency variables that affected the facilitation of OPS fit during the ES implementation. The within-case analysis of the cases focuses on these four variables. Before presenting the within-case analysis, a discourse of the four variables and their manifestations in each of the two cases is presented.

5.1.1 Stakeholder Power Contingency Variable

One contingency variable prominently seen during the facilitation of OPS fit during the ES implementation in the two cases was stakeholder power. Power exists when one social actor, A, can get another social actor, B, to do something that B would not have otherwise done (Agle et al., 1999).

Power is intimately related to leadership (Fiedler & Garcia, 1987). Given the scope of ES and involvement of numerous stakeholders, studies suggested that only top management has the authority to push for fit and stakeholder buy-in (Al-Mudimigh et al., 2001; Brown & Vessey, 2003). This is important in facilitating OPS fit due to the concern that OPS misfits may not converge over time, and thus, an external agent is necessary to push them in the same direction. Power provides the leverage for this push.

While the contingency theory of leadership focuses on a leader's power, evidence from the case suggests that power may be accrued from multiple sources beyond a leader's institutionalized power (Schneider, 2002). It may come from delegated authority by management (Rau, 2004), possession of critical skills (Mitchell et al., 1997), or centrality in a network (Rowley, 1997). The within-case analysis thus considers stakeholder power, which is possessed by any relevant stakeholder that may be pertinent in a given phase or activity during an ES implementation.

During the LEO project, various types of power were relevant and various strategies for managing stakeholder power were seen. For instance, during post-implementation, the PM had full authority over changes made to LEO but when there was a potential disruption of their PBL pedagogy, the OAA Director exerted his authority to over-rule the PM and force a change in LEO.

Similarly, during the EBS implementation, various types of power and strategies for managing power were relevant. For example, in development, the consultants' in-depth package knowledge gave them a greater say in what the final system could and could not do, and this contributed to the decision to get internal IS staff to alter re-use items from CMS to fit EBS.

5.1.2 Stakeholder Knowledge Contingency Variable

The second contingency variable that was prominent during the facilitation of OPS fit during the ES implementation in the two cases was stakeholder knowledge. Sharing and utilizing knowledge from multiple stakeholders during ES implementations is important (Kearns & Sabherwal, 2006-07; Soh & Sia, 2005). Knowledge that may be relevant during an ES project includes technical specialties, technology management, business functions, management and interpersonal knowledge (Tesch et al., 2003). However, this knowledge is typically shared among multiple stakeholders (Schneider, 2002), and needs to be shared to mitigate knowledge asymmetries that may otherwise create knowledge barriers that inhibit adoption (Ko et al., 2005).

The management of stakeholder knowledge is pertinent for facilitating OPS fit as in-depth knowledge about each component is held by different stakeholders, for example, staff possess business knowledge while consultants have in-depth package knowledge (Wang et al., 2006). Hence, leaders have to effectively manage the sharing of this knowledge to successfully facilitate OPS fit.

Knowledge is not only a contingency that affects organizational effectiveness (Birkinshaw et al., 2002), but the contingency theory of leadership model claims that a leader's position power is partly affected by his possession of special knowledge that is unavailable to other members (Mitchell et al., 1970). Evidence from the cases though, extends the importance of knowledge as a contingency variable that is distinct from power. In the context of an ES project, key knowledge for successfully facilitating OPS fit rests with multiple stakeholders. The within-case analysis thus focuses on stakeholder knowledge, which includes any aspect of an ES project from any relevant stakeholder, as a separate contingency variable.

During the LEO project, various types of knowledge were relevant and various strategies for managing stakeholder knowledge were seen. For instance, during development, the PM was appointed partly due to his background knowledge of e-learning platforms and academic policies, which enabled him to better understand and balance the interests of RP and the vendors.

Similarly, during the EBS implementation, various types of knowledge and corresponding strategies for managing the knowledge were relevant. For instance, during pre-planning, the MD visited companies in other countries that were implementing similar systems to learn about the challenges they faced. He also spoke to SPS staff to learn about their unique concerns and issues that needed to be addressed by effective project management and suitable package features.

5.1.3 Stakeholder Inter-Relationship Contingency Variable

The third contingency variable that was prominent during the facilitation of OPS fit during the implementation of the ES in the two cases was stakeholder inter-relationships. ES projects involve cross-functional teams with a mix of relevant internal and external parties (Davenport, 1998; Nah et al., 2001), and ES project hinge in part on their effective collaboration (Hitt et al., 2002).

Despite this, little attention was given to the study of relevant stakeholders and their inter-relationships during ES projects, which is surprising given their high interdependence (Rowley, 1997). Moreover, ES are typically integrated across multiple departments within and outside the firm so it is crucial for stakeholders to understand how their actions affected others (Robey et al., 2002). Such insight enables leaders to balance the collaborative efforts of these stakeholders.

The contingency theory of leadership focused on leader-member relations (Fiedler, 2005). Research though, showed that stakeholders, including leaders, did not exist in isolation and had to work together to maximize their diverse expertise to produce synergistic solutions (Hardy et al., 2005; Levina, 2005). The within-case analysis thus focuses on stakeholder inter-relationships, which are the complete network of interactions between all relevant stakeholders.

During the LEO implementation, various types of networks of stakeholder inter-relationships were relevant and various strategies for managing their interactions were seen. For instance, during planning, there was a hub-and-

spoke model in RP, with the OAA Director as the key decision-maker for selecting the package and he had dyadic links with other stakeholders to gather their feedback deciding.

Similarly, during the EBS implementation, various types of inter-relationship networks and corresponding strategies for managing their interactions were relevant. For example, during post-implementation, staff generally formed a more interconnected web of relationships that enabled them to easily approach anyone, from users to internal IS staff to consultants for guidance and clarification, even after the completion of the formal end-user training sessions.

5.1.4 Stakeholder Identity Contingency Variable

The fourth contingency variable that was prominent during the facilitation of OPS fit during the implementation of the ES in the two cases was stakeholder identity. People created identities to differentiate themselves and be recognized in this way by the outside world (Rowley & Moldoveanu, 2003). A person's identity provides insight into how the person will behave in a given context (Ellemers et al., 2004).

This is pertinent in the context of an ES implementation given the diversity and multitude of stakeholders who can affect or are affected by the system, as they may possess different identities and exhibit different behaviours. Prior research outlined three types of identity: personal, relational, and collective (Brickson, 2000; Flynn, 2005), with managers seeking to ultimately foster a collective organizational identity, as it makes them more amenable to adapting

their interests to those of the firm during an ES project, thus increasing solidarity (Rowley & Moldoveanu, 2003) and organizational commitment (Ashforth & Mael, 1989).

The contingency theory of leadership focused on situational control as it pertains to the leader. This, however, trivialized the identity and behaviour of other diverse stakeholders of the ES implementation when they are not linked to the leader, and how such diversity should be managed. This is important because all stakeholders, leaders included, were crucial to an ES project at different phases, and a deeper understanding of the motivation for their behaviour was required. The within-case analysis thus incorporates stakeholder identity, which is the identity of any relevant stakeholder across the different phases of the ES project.

During the LEO implementation, the three types of identity and how they evolved was relevant and various strategies for managing stakeholder identity were seen. For example, during post-implementation, there was concerted effort to convince the EIS to more closely identify with RP so they would go beyond contractual obligations to suggest ways of modifying LEO for the holistic good of RP.

Similarly, during the EBS implementation, the various types of identity and their evolution, and corresponding strategies for managing the identity, were relevant. For instance, during planning, staff with personal or relational identities focused on the requirements that best benefitted themselves, or at

best, their department. Consequently, when the Working Committee Chairman sought to shorten the lengthy list of BPDs, staff was generally unwilling to budge, as they felt that their respective requirements were all critically important to SPS operations.

5.2 Within-Case Analysis of Republic Polytechnic's LEO Implementation

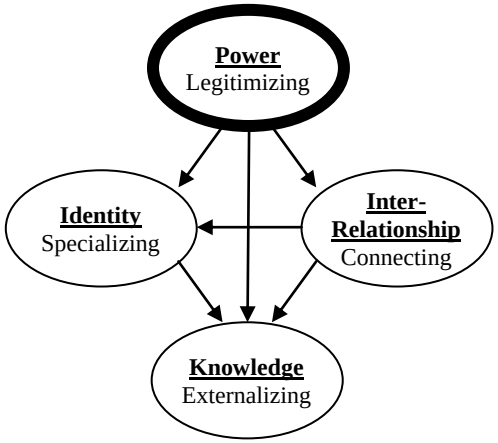
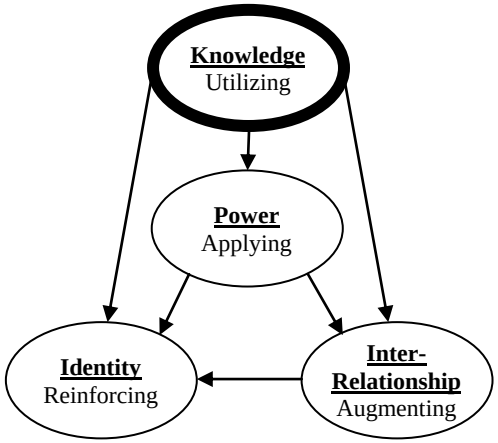
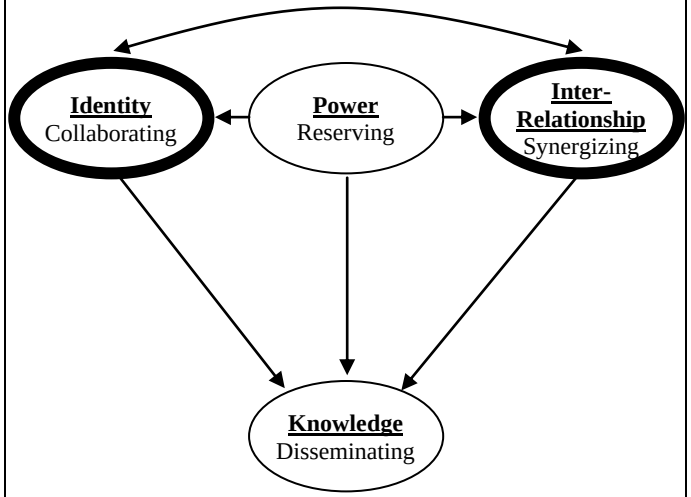
The within-case analysis of RP's LEO implementation examined the symbiotic links between the four key contingency variables during the three phases of the LEO project. In each phase, a different contingency variable took precedence and their symbiotic links varied. The activities and stakeholder behaviour in each phase was motivated by a different aspect of facilitating OPS fit and required a different leadership style. These results are summarized in a conceptual framework on managing OPS fit during the implementation of LEO in RP (see Figure 8). The rest of this section elucidates this framework.

5.2.1 Planning Phase

5.2.1.1 OPS Fit Ascertainment Driven Motivation

During the planning phase, the motivation was to successfully locate areas of OPS misfit. Since RP wanted to maintain their organizational requirements and would not allow an external package to dictate their practices (Wang et al., 2006), they sought a package that fit the interests of RP and their stakeholders, or a vendor that would extensively modify their package to ensure this fit.

Figure 8: A Conceptual Framework on Managing of OPS Fit during the Implementation of LEO in RP

Phase	Planning	Development	Post-Implementation
Motivation	OPS Fit Ascertainment	OPS Fit Resolution	OPS Fit Re-Education
Leadership Style	Task Oriented	Task Oriented	Relationship-Leveraging Oriented & Ad-Hoc Task Oriented
Focal Contingency Variable	Power	Knowledge	Identity and Inter-Relationship
Situational Control and Symbiotic Links among Contingency Variables			

To brief the vendors on the scope of potential package modifications, feedback from all internal stakeholders was consolidated. However, as RP was finalizing their PBL pedagogy at this time, key top management articulated most of RP's requirements, with input from other stakeholders where possible. For example, internal IT staff evaluated whether the packages could be supported by RP's IT infrastructure and department Directors highlighted unique curriculum needs. Consequently, these stakeholders had at least some input in package selection, which increased their acceptance of the package (Bernroider & Koch, 2001), and it set the foundation for closer working relationships among stakeholders, which was necessary for their long-term relationship (Gable et al., 2001) during their tenure in RP. This also outlined what OPS misfits existed (Hong & Kim, 2002), which helped RP select a vendor that could best help them alleviate these misfits.

Given the emphasis in this phase on identifying the core interests of RP and their stakeholders, and selecting a vendor that could modify their package to support their needs, the main motivation in this phase is termed as ascertainment. For the motivating force of ascertainment to take precedence, management needs to be cognizant of their stakeholders and focus on balancing their needs to alleviate OPS misfits. Ascertainment laid the foundation for OPS fit facilitation by spotting and understanding OPS misfits between organizational functionality, package features and stakeholder needs (Dishaw & Strong, 1999; Hong & Kim, 2002).

5.2.1.2 Task Oriented Leadership Style

The key leaders in this phase were the OAA Director and Deputy Principal. The OAA Director outlined RP's educational methodology while the Deputy Principal spearheaded RP's e-culture. The OAA Director also oversaw the vendor selection process and was a key figure in coordinating the final selection.

While there was some emphasis on educating staff about RP's direction, the main emphasis in this phase was to lay the foundation for RP's direction, and find a vendor and package to support this direction. For example, while laying RP's foundation, the OAA Director dictated the core tenets of the PBL pedagogy. He then educated other RP staff about this pedagogy and sought input on how to operationalize them. Likewise, the Deputy Principal envisioned RP's e-culture and pushed staff to embrace it. Then, during vendor selection, all staff listened to the presentations and provided feedback on the packages. However, the emphasis was on consolidating this feedback before top management decided on a package to fit the needs of RP and its stakeholders, and ensured that the vendor was willing to heavily modify the package for them, if necessary.

The contingency theory of leadership model defines this style of leadership as task-oriented (Fiedler & Garcia, 1987). At this juncture of the project and given the tight deadlines within RP and the straightforward nature of the activities, the focus for these leaders was largely on task performance and putting into place the necessary structure and organization to facilitate the ascertainment of OPS misfits.

5.2.1.3 Power-Centred Situational Control

5.2.1.3.1 Legitimizing Power

Given the motivation to facilitate OPS fit ascertainment due to RP's unique functional requirements, RP leveraged off an external package to implement an e-learning platform that supported the RP-wide educational and IT direction. Top management was the key driving force in laying RP's foundation and selecting an appropriate package, as they used their institutionalized power (Schneider, 2002) to get staff to accept their decisions. Thus, in this phase, power was as a primary contingency variable in controlling the situational environment during the LEO project. Power also affected the identity (Kochan & Rubinstein, 2000), inter-relationships (Nambisan & Agarwal, 1998) and knowledge (Volkoff et al., 2004) contingency variables.

One aspect of RP's IT direction was becoming a paperless organization, which meant LEO had full e-document support. To adhere to this, the Deputy Principal used his authority to get rid of almost all their printers and impose strict print limits for staff. During vendor selection, while input was sought from academic staff, they mainly commented on general interface issues, while top management, most notable the OAA Director, had the authority to decide on the vendor and package that they found most suitable. Such activities underscored the use of power to dictate the flow of activities in this phase. This use of power was largely derived from institutionalized power due to the hierarchical position (Wang et al.,

2006) of RP top management. It also enabled them to force other stakeholders to accept their assessment of the OPS misfits that needed to be addressed.

Hence, the process of using power to control the LEO project situation to facilitate OPS fit ascertainment is termed as legitimizing. Legitimizing power is to formally acknowledge that a stakeholder has a legitimate right to influence another stakeholder and that the latter is obligated to accept this influence (French & Raven, 2004). In this context, it covers the institutional power of key top management staff, which enables them to direct the ascertaining of OPS misfits.

5.2.1.3.2 Connecting Inter-Relationships

It was found that inter-relationships were affected by the legitimizing of power. During this phase, efforts were made to enhance stakeholder interactions within departments and across RP. For example, all academic and internal IT staff were forced by top management to attend the vendor presentations, which enabled them to meet staff from other departments and build closer inter-relationships via this common experience. Within each department, the Director used his authority to push for feedback from his academic staff on their modular requirements to assess what features they needed in LEO to support their department. Their interactions fostered closer inter-relationships among staff at the department level.

This underscored the role of inter-relationships in this phase, which was to help develop a stakeholder web of multilateral stakeholder dialogues (Friedman &

Miles, 2002) to foster greater connectivity and mutual understanding. This provided insight into their numerous perspectives so potential OPS misfits were noted, particularly among different stakeholder groups and with RP as a whole.

Hence, the process of using inter-relationships to control the LEO project situation to facilitate OPS fit ascertainment is termed as connecting. Connecting inter-relationships is to join and associate diverse stakeholders to establish a rapport so they can better understand each other's unique needs. This is important since interacting with other stakeholders has intrinsic value (Shankar et al., 2002), as it allows them to pinpoint potential areas of misfit. It is also a useful foundation for future stakeholder collaborations.

5.2.1.3.3 Specializing Identity

It was found that identity was also affected by the legitimizing of power. Although the OAA Director was the main proponent of the PBL pedagogy, which was the core of what the package would support, the department Directors had sufficient authority to push for consideration of their unique curriculum needs.

Moreover, it was found that identity was affected by the connecting of inter-relationships. After sitting through the vendor presentations, staff formally and informally met their peers in their respective departments to discuss the packages. As they were concurrently working on their respective module curriculums at that

time, this helped them better understand each others' concerns, which contributed to their burgeoning department-wide relational identity.

Such activities underscored the role of identity in this phase. The role of identity in this phase was to validate the roles and responsibilities of the stakeholders to clarify their spheres of influence in outlining RP's direction and curriculum. Then, each stakeholder group focused on their respective areas and provided insights on unique needs that may cause OPS misfits. This could be in terms of their personal identity and self-interests of what they wanted LEO to support, or relational identity and their desire to support their department (Brickson, 2000; Flynn, 2005).

Hence, the process of using identity to control the LEO project situation to facilitate OPS fit ascertainment is termed as specializing. Specializing identity is to focus on an area of interest based on one's self-concept. This covers any narrow interests, such as personal needs or department-wide requirements. Hence, OPS misfits involving these interests are more effectively ascertained. At this juncture though, except for certain key top management staff, most stakeholders were not yet aligned with RP's direction (Rowley & Moldoveanu, 2003).

5.2.1.3.4 Externalizing Knowledge

Finally, it was found that knowledge was affected by the legitimizing of power. One unique aspect of RP was they were a new institute and used this opportunity to lay a brand new foundation for RP. For example, the OAA Director sought to

capitalize on his position of authority to crystallize his vision for RP by explicating from scratch the core tenets of the PBL pedagogy.

It was also found that knowledge was affected by the specializing of identity. Although the OAA Director came up with the PBL pedagogy, stakeholders with common department-wide understanding of their curriculum could highlight unique department-related functionality that the system had to support. Furthermore, it was found that knowledge was affected by the connecting of inter-relationships. Academic staff initially had no knowledge about the PBL pedagogy, as it was developed by the OAA Director but through the inter-relationships they formed, they could share what little knowledge they had and achieve a more in-depth understanding of RP's direction and what the LEO system should achieve.

Such activities underscored the role of knowledge in this phase. The role of knowledge in this phase was to facilitate the formal building of core knowledge based on the input of a few key stakeholders. This helped to clearly express this knowledge in a form that could be understood by all stakeholders (Nonaka, 1998).

Hence, the process of using knowledge to control the LEO project situation to facilitate OPS fit ascertainment is termed as externalizing. The externalizing of knowledge is to translate tacit knowledge into comprehensible explicit knowledge that is easily understood by everyone. To minimize information overload, the bulk of this knowledge is derived from several key stakeholders, and fused and made

available for integration with the organization's mental world (Nonaka, 1998) so OPS misfits, mainly those involving the RP direction, could be ascertained.

5.2.2 Development Phase

5.2.2.1 OPS Fit Resolution Driven Motivation

During the development phase, the motivation was for successfully actualizing solutions that resolved OPS misfits ascertained in the previous phase. However, unlike popular literature that advocated reengineering the firm's business processes to fit the package (Gattiker & Goodhue, 2005), the strong desire in RP to maintain their organizational requirements meant that the main emphasis in this phase was on modifying the package to fit the interests of RP and its stakeholders.

One example was the consultative approach adopted by the PM while overseeing these modifications. Although he obtained the bulk of the RP requirements from the OAA Director, he still consulted other key staff for department-specific needs. He consulted several academic staff for a sample of their interests and discussed with internal IT staff about the technical constraints of existing IT infrastructure in RP. This gave him a multi-faceted view of the issues affecting OPS alignment since no single stakeholder had all the knowledge he required (Schneider, 2002).

Another example of the impact of the motivating force in this phase was the instructions given by top management. As the LEO team only had six months to roll-out a solution, top management instructed them to develop a viable solution

quickly and delay implementing non-critical functions until after the system rolled-out. Consequently, the LEO team even delayed user testing of the system until after it was rolled-out so they could concentrate on post-purchase tailoring alternatives (Soh & Sia, 2005) to address OPS fit issues, with particular emphasis on assessing how to modify the package to fit RP (Kutar & Light, 2005).

In view of the emphasis in this phase on devising solutions to alleviate areas of OPS misfit, the main motivation in this phase is termed as resolution. For the motivating force of resolution to take precedence, management needs to support some form of post purchase tailoring to ensure OPS alignment. While the core tailoring efforts are geared towards package modification, it would be wise for the firm to consider alternative solutions that may be more appropriate. This results in suitable solutions that alleviate misfits between the technological imperatives of the ES package, the firm's holistic functional requirements, and the unique needs of diverse stakeholders (Cale & Eriksen, 1994).

5.2.2.2 Task Oriented Leadership Style

The key leaders in this phase were the OAA Director and PM. The OAA Director outlined RP's educational methodology which the system had to support, and the PM oversaw the development of a system that alleviated OPS misfit concerns.

Since the main emphasis in this phase was to roll-out a working system within the tight deadline of six months, these leaders focused on addressing OPS misfits and

modifying the package. For example, to ensure that they could focus on their task, the PM and LEO team were housed in the same location outside the office of the OAA Director. This enabled them to communicate face-to-face regularly while modifying the package and it minimized interruptions from other stakeholders. Another example pertains to the involvement of academic staff. While their input during the development process was desirable, the LEO team did not want to deal with so many stakeholders individually so they appointed representatives such as the program chairs to liaise with other staff. Thus, the LEO team more efficiently gathered requirements from staff and focused on developing the system.

The contingency theory of leadership model defines this style of leadership as being task-oriented (Fiedler & Garcia, 1987). At this juncture of the project, the LEO team faced a tight deadline to complete their technical activities. Hence the focus of leaders was on efficient completion of their tasks and putting into place the necessary structure and organization to facilitate the resolution of OPS fit.

5.2.2.3 Knowledge-Centred Situational Control

5.2.2.3.1 Utilizing Knowledge

Given the motivation to facilitate OPS fit resolution due to misalignments between RP functionality, LEO package features and stakeholder needs, RP considered several solutions to alleviate misfits, with emphasis on package modification. Given the diversity of solutions though, knowledge from different stakeholders was crucial for evaluating and adopting an appropriate solution. ES

implementations are known to require a wide range of knowledge (Ko et al., 2005) that is dispersed across multiple internal and external stakeholders (Kearns & Sabherwal, 2006-7). Thus, in this phase, knowledge emerged as a primary contingency variable in controlling the underlying situational environment during the LEO project. Moreover, knowledge affected the identity (Reich & Benbasat, 2000), inter-relationships (Kochan & Rubinstein, 2000; Schneider, 2002) and power (Kochan & Rubinstein, 2000) contingency variables.

In modifying the core package features, the PM tapped heavily on the educational pedagogy knowledge of the OAA Director. This information helped highlight gaps in the package that needed to be addressed to ensure OPS fit. Also, while the EIS were knowledgeable about the package features, they still relied on the knowledge gleaned from internal IT staff about RP's IT infrastructure so the package could be suitably modified to fit RP's hardware and other systems.

Such activities underscored the use of knowledge to dictate the flow of activities in this phase. The EIS possessed the necessary package knowledge but they and the PM needed valuable knowledge from internal RP staff to better understand OPS misfits and find appropriate solutions. While prior literature proposed the involvement of team members with an appropriate mix of knowledge (Newell et al., 2002), evidence from the case suggests that the core team could consist mainly of EIS, as long as the PM gathered the necessary knowledge, interpreted it and worked closely with the EIS to implement the necessary solutions.

Hence, the process of using knowledge to control the LEO project situation to facilitate OPS fit ascertainment is termed as utilizing. Utilizing knowledge is to maximize the full potential of consolidated knowledge from multiple sources. Consolidating and maximizing the full potential of this knowledge enables overcoming stakeholder ignorance of others' needs (Kearns & Sabherwal, 2006-7), as the LEO team feedback to them on how their needs fit those of RP and other stakeholders, and how potential OPS misfits can be addressed.

5.2.2.3.2 Applying Power

It was found that power was affected by the utilizing of knowledge. To enable him to identify the most appropriate OPS misfit resolution strategies, the PM consolidated pertinent knowledge about RP functionality and stakeholder interests from RP staff. He also learnt from the EIS about the package features and limitations. He thus became a key central repository of the diverse project-wide knowledge. Leveraging off this knowledge gave him the power to push through necessary OPS fit resolution strategies. However, knowledge about the core RP educational functionality was obtained from the OAA Director. This knowledge was paramount as top management decided that the PBL pedagogy was largely inviolate and the system should mainly be modified to support it. Thus, the OAA Director's leverage of this knowledge gave him power to veto even the decisions of the PM where necessary in terms of how OPS misfits should be resolved.

Such activities underscored the role of power in this phase. The role of power in this phase was to allow stakeholders to leverage off legitimate bases of authority to push through OPS fit resolution strategies to roll out the system within the short time frame. In essence, key stakeholders used their power to mobilize resources and enforce decisions to accomplish their goal (Krackhardt, 1990).

Hence, the process of using power to control the LEO project situation to facilitate OPS fit resolution is termed as applying. The applying of power is to put into action the legitimate power that key stakeholders possess. Since there is a short timeframe in which OPS fit had to be resolved, and given the multitude of stakeholders who can affect LEO, it was necessary for central authority figures to tap on power bases to tighten control over this phase to ensure the task gets done. Influence generated from the materialization of their power (Roomer & Wijen, 2006) provided the crucial stimulus to complete the task.

5.2.2.3.3 Augmenting Inter-Relationships

It was found that inter-relationships were affected by the utilizing of knowledge. For example, a representative was appointed from each department to share knowledge between their respective departments and the LEO team. As the LEO team tapped onto this knowledge, they feedback to this representative or sought clarification, and this strengthened the department's internal relationships as the representative liaised with his colleagues to discuss these issues.

Moreover, it was found that inter-relationships were affected by the applying of power. The LEO team worked together under the purview of the OAA Director to resolve OPS misfits. To facilitate this, they were housed outside the OAA Director's office. Hence, the OAA Director oversaw their progress and his authoritative presence was an extra impetus for the LEO team to strengthen their working relationship and collaborate more effectively on their task.

Such activities underscored the role of inter-relationships in this phase. The role of inter-relationships in this phase was to strengthen the stakeholder links that were developed in the previous phase. Thus, although RP consisted of a network of multiple stakeholders engaged in different interdependent relationships (Bots et al., 2000), since the focus was on resolving OPS fit, additional effort was not yet required to expand their stakeholder web or facilitate new inter-relationships.

Hence, the process of using inter-relationships to control the LEO project situation to facilitate OPS fit resolution is termed as augmenting. The augmenting of inter-relationships is to get stakeholders to interact more frequently via existing links. This fostered longer-term partnerships between stakeholders (Gable et al., 2001), which enabled them to offer more collective suggestions to improve LEO.

5.2.2.3.4 Reinforcing Identity

Finally, it was found that identity was also affected by the utilizing of knowledge. Initially, the PM primarily managed the task of implementing LEO. So in a way,

his main motivation was personally oriented as he focused on completing his job. However, as he consolidated knowledge from different stakeholders and gained a better understanding of RP's direction, the package and stakeholder needs, he developed a holistic appreciation of the organization and its organization-wide system, which culminated in the assimilation of a collective identity.

It was also found that identity was affected by the applying of power. Initially, the EIS advocated minimizing modifications unless absolutely necessary. However, the PM used his authority to force the EIS to better understand the rationale for the requests by RP and its staff so they were more willing to modify their package. This in turn increased the emotional attachment that the EIS felt for RP.

Moreover, it was found that identity was affected by the augmenting of inter-relationships. The PM liaised with the departments to find their unique needs that had to be addressed. The Directors thus tapped onto their inter-relationships with staff, and those among their staff, to analyze their curriculum for unique functions. Consequently, staff in the department gained a closer affinity with their department and a desire to enhance its well-being above their own.

Such activities underscored the role of identity in this phase, which was to fortify the budding affinity that stakeholders had with RP and their departments. While stakeholders should ideally converge their beliefs and embrace a collective RP identity, due to time constraints, the best that could be achieved during this phase

was to stabilize the status quo. Thus, the dynamism of their identification process (Brickson, 2000) was not fully capitalized on in this phase.

Hence, the process of using identity to control the LEO project situation to facilitate OPS fit resolution is termed as reinforcing. Reinforcing identity is to encourage people to strengthen and make their affiliations more pronounced. The emphasis is more on reinforcing relational or collective identities, rather than personal identities, which may not be congruent with RP's vision in implementing LEO (Brewer & Gardner, 1996). Consequently, they became more experienced in adopting a department or RP lens to analyze LEO and pinpoint OPS misfits.

5.2.3 Post-Implementation Phase

5.2.3.1 OPS Fit Re-Education Driven Motivation

During the post-implementation phase, the motivation was for successfully disseminating relevant knowledge about LEO to ensure stakeholders could use it effectively. In addition, there were ongoing steps to improve OPS fit and where necessary, disseminate more relevant knowledge. Thus, in this project phase, sharing of pertinent OPS fit knowledge among implementation partners was deemed most important (Wang et al., 2006).

One example was the heavy reliance on peer learning and on-the-job education to disseminate knowledge when LEO was rolled-out, unlike formal training sessions which were considered important drivers of success for ES projects (Akkermans

& van Helden, 2002). Given the enterprise-wide nature of LEO and how it is affected by numerous stakeholders, this was prudent as for it to be effective, it was necessary to first develop closer relationships between these stakeholders.

During the maintenance process, the LEO team focused on gathering suggestions, evaluating them, implementing changes, and re-disseminating knowledge about these changes so staff could adjust their mindset and working style. However, to minimize superficial or individualistic suggestions, there was a concerted effort to strengthen stakeholder affinity with RP so they could suggest more pertinent ideas that improved the way LEO was used across RP. Thus, the ability to focus on knowledge dissemination relied heavily on increasing the emotional connection stakeholders had with the broader collective community (Ashforth & Mael, 1989).

In view of the emphasis in this phase on knowledge sharing to update relevant stakeholders about the new system and enhancements to OPS fit, the main motivation in this phase is termed as re-education. For the motivating force of re-education to take precedence, management needs to advocate an inter-connected stakeholder web to support formal and informal communication, and closer rapport among stakeholders and with RP so they are more willing and able to exchange knowledge. This is important so they learn how to use LEO and better understand how OPS misfits were resolved and how their interests were in sync with those of the organization and package features (Cale & Eriksen, 1994).

5.2.3.2 Relationship-Leveraging Oriented Leadership Style

The key leaders in this phase were the OAA Director, PM and users. The OAA Director oversaw the LEO system since it belonged to OAA and ensured that it remained aligned with RP's direction. The PM evaluated change requests, coordinated OPS alignment and facilitated the re-education of stakeholders about changes made. Finally, at this juncture, users were more knowledgeable about LEO and RP's direction, and they developed a closer bond with their respective departments and RP. So, they gradually adopted a more proactive and important role in pushing for improvements to facilitate OPS fit.

An example of the importance of the relationship-leveraging orientation in this phase can be found in a situation where it did not take place. The OAA Director found a fundamental discrepancy between the use of LEO and RP's educational pedagogy and swiftly enforced a change. Once users were re-educated on what the change entailed and why it was necessary, they generally accepted the need to preserve RP's direction. However, they were unhappy with the high-handed task-oriented style of leadership to resolve this situation and asked top management to embrace a more consultative style of leadership in the future so all stakeholders could interact and contribute towards the proposed change.

In addition, when the LEO team received requests, they conducted consultations that leveraged off existing stakeholder relationships, to understand the request and assess whether it facilitated OPS fit. For example, the PM consulted program

chairs and users for feedback, EIS discussed with internal IT staff on whether existing IT infrastructure could support the change, and the LEO team invited the person who made the suggestion for a face-to-face meeting to discuss the request.

The contingency theory of leadership model defines this style of leadership as being relationship-oriented (Fiedler & Garcia, 1987). Evidence from the case suggests that more specifically, the focal point of this style of leadership in this phase was not merely about building or maintaining stakeholder relationships. Rather, at this juncture, the focus for these leaders was to strengthen and tap onto existing inter-relationships between the stakeholders of LEO to advocate greater stakeholder proactivity and self-management. Thus, the leadership style in this phase can more accurately be defined as a relationship-leveraging oriented style.

5.2.3.3 Identity- and Inter-Relationship-Centred Situational Control

5.2.3.3.1 Collaborating Identity and Synergizing Inter-Relationships

Given the motivation to facilitate OPS fit re-education to ensure stakeholders understood and maximized their use and improvement of LEO, RP sought to get stakeholders to foster a closer affinity with LEO and RP's direction, and assume greater responsibility to make it work. Consequently, RP encouraged stakeholders to develop a collective identity and build closer links between stakeholders to realize their vision of a flat organizational hierarchical structure.

A collective identity led stakeholders to see other stakeholders and the firm as cognitive extensions of their self so they closely identified with the firm's welfare over their own (Wendt, 1994), as seen in the quality of suggestions and proactive projects initiated by stakeholders. Stakeholder performance in facilitating OPS fit was also enhanced due to better stakeholder interconnectivity (Kochan & Rubinstein, 2000). Thus, in this phase, identity and inter-relationships were co-primary contingency variables in controlling the underlying situational environment. Moreover, identity affected the knowledge (Rowley & Moldoveanu, 2003) contingency variables. Likewise, inter-relationships affected the knowledge (Serafeimidis & Smithson, 2003) contingency variables.

One example of the impact of collective identification was when a facilitator proactively helped develop an ad-hoc staff survey application built on LEO. He consolidated and disseminated the results and assessments of how they fared individually and comparatively across departments and RP. The sudden removal of access to student quiz results prior to grading them by top management was another example. Facilitators were unhappy with the way the change was enforced but their affinity with RP enabled them to understand and accept that its justification was to preserve OPS fit after a brief explanation by the OAA Director.

Such activities underscored the use of identity to dictate the flow of activities in this phase. As stakeholders garnered a closer collective identity with regards to LEO and RP, they shared a common fate (McEvily et al., 2003) with both entities.

So, they were more inclined to contribute toward collective endeavours (Levina, 2005). This, however, was an ongoing challenge due the continuous influx of new staff, and the split identity of the EIS due to the concurrent affinity with Wizlearn.

Hence, the process of using identity to control the LEO project situation to facilitate OPS fit re-education is termed as collaborating. Collaborating identity is to leverage off stakeholders' mutual support of the firm and ES to proactively work together for the welfare of the collective. This goes beyond developing convergent beliefs (Hardy et al., 2005) as it requires stakeholders to proactively contribute towards improving OPS fit.

Previously, stakeholders focused on their own areas of concern or only developed close links with peers in the same module or department. However, in this phase, RP tried to get staff to work closely with peers in other departments so they better understood the issues they faced. Then, the LEO team could form ad-hoc inter-department committees to assess LEO and suggest improvements that benefitted all their departments and RP as a whole. While in the past, stakeholders relied on on-the-job education to learn about how OPS fit was facilitated, in this phase, more stakeholders embraced peer learning due to the close working and personal relationships they developed with other stakeholders.

Such activities underscored the concurrent use of inter-relationships to dictate the flow of activities in this phase. Stakeholders strengthened the stakeholder web

(Pan, 2005) that developed since the start of the project and by this time, there were more direct relationships between many stakeholders (Rowley, 1997). These links encouraged formal and informal communications (Serafeimidis & Smithson, 2003) so they could share mutually beneficial ideas about improving OPS fit.

Hence, the process of using inter-relationships to control the LEO project situation to facilitate OPS fit re-education is termed as synergizing. Synergizing inter-relationships is to enhance the links between different stakeholders so they willingly cooperate to achieve a mutually beneficial desired outcome. This also increased stakeholder self-management (Schneider, 2002), as they proactively discussed with peers from other departments before tabling suggestions.

It was found that identity was affected by the synergizing of inter-relationships. As staff in each department had formal and informal discussions on enhancing OPS fit, they better understood the needs of other modules, their peers, and RP's direction. This led many of them to strengthen their relational identity orientation with their departments, with several staff embracing a more holistic collective RP identity orientation. Similarly, due to regular interactions between the EIS and PM, the EIS gained more insight into RP's direction. Thus, they were more willing to support change requests from RP staff to facilitate OPS fit, with several EIS also proactively contributing towards enhancing OPS fit. Thus stakeholders sought benefits for other parties in their relationships (Brewer & Gardner, 1996).

It was also found that inter-relationships were affected by the collaborating of identities. This was evident in senior staff who internalized the RP vision. They exhibited a greater desire to offer suggestions to improve the use of LEO for the benefit of all staff. They were more willing to eschew rigid formal channels of communication, and directly contact EIS who they had a close relationship with, and discuss ideas. In contrast, stakeholders with personal identity orientations focused on their own or modular needs. Directors considered this a disadvantage as it minimized sharing of innovative ideas so they sought ways to get facilitators to interact more with peers and share ideas. The holistic collective identity thus led to more multi-lateral and coalitional stakeholder inter-relationships (Mitchell et al., 1997), which promoted OPS fit facilitation for the benefit of RP.

Moreover, it was found that identity was affected by the reserving of power. Although the OAA Director later clarified the rationale for blocking quiz scores from facilitators, several staff felt that such impromptu top-down forced changes meant their input was unimportant to top management. This caused the collective affinity of these stakeholders to weaken. When prioritizing change requests, the PM consulted relevant stakeholders affected by the change before tapping on his authority to make changes. This engendered trust that the PM was working for the benefit of RP as a whole. Thus, other stakeholders were inspired to follow suit and contribute towards OPS fit. Power thus enables stakeholders to get others to cooperate for a common purpose (Mitchell et al., 1997), but could have positive or negative impact on identity depending on its application

Finally, it was found that inter-relationships were affected by the reserving of power. The Deputy Principal wanted to view all suggestions so he could track issues raised by RP staff. He thus used his authority get all SSS suggestions to be sent to him first and he forwarded them to the Directors or departments. He thus carved out a hub-and-spoke model of relationship for this purpose amidst the stakeholder web of relationships. In another example, the PM was the gatekeeper and decision-maker on changes to facilitate OPS fit. Thus, although stakeholders could submit suggestions through multiple channels, all of them were eventually routed to the PM. Several stakeholders thus opted to approach the PM directly. Thus, while there existed a stakeholder web among RP stakeholders, the PM was a prominent figure in the web with perhaps the highest local centrality score (Nambisan & Agarwal, 1998). This gave him ample access to all relevant stakeholder knowledge to support his facilitation of OPS fit.

5.2.3.3.2 Reserving Power

Given the motivation to facilitate OPS fit re-education so stakeholders had sufficient knowledge about LEO and could better contribute to improving OPS fit, RP wanted stakeholders to be more proactive in sharing knowledge. However, at times, stakeholder efforts countered OPS fit facilitation. Hence, top management had to step in to make top-down decisions to smoothen the process. Therefore, at this juncture, stakeholder power was passive and only enacted for certain implied behaviours (Mitchell et al., 1997). Thus, in this phase, power emerged as an ad-

hoc contingency variable that was only used to control the underlying situational environment during the LEO project when necessary. Moreover, power affected the identity (Kochan & Rubinstein, 2000), inter-relationships (Nambisan & Agarwal, 1998) and knowledge (Volkoff et al., 2004) contingency variables.

One example was in the authority granted to the PM in this phase. To enable his LEO team to carry out ongoing OPS fit facilitation with minimal disruptions, there were no restrictions from RP top management on how they decided on changes, as long as they abided by a few core rules, most notably that they should not unduly disrupt RP's organizational direction. Even Wizlearn passed decision making authority to the EIS seconded to RP who were answerable to the PM. In another example, RP was assessing whether to conduct their Understanding Tests via LEO off student notebooks in their respective classrooms rather than gathering everyone into a single hall for a paper-based common test. Feedback from various parties including academic and IT staff was that it was possible but potentially challenging. However, the decision was taken by top management that this was a natural step in fulfilling RP's direction so they tasked the LEO team with doing this. The team worked closely with other stakeholders to implement this. It entailed technical changes, such as to support the heavy load on servers when all students did the test concurrently, and curriculum changes, such as changing questions to support open book tests and ascertaining how to handle mathematical questions since LEO did not fully support viewing of mathematical symbols.

Such activities underscored the role of power in this phase. The role of power in this phase was to push through changes to ensure that the LEO team continued to facilitate OPS fit and maintain the integrity of RP's functional needs. However, this power was only activated when necessary, as the main focus was still on encouraging greater stakeholder empowerment and autonomy (Schneider, 2002). Consequently, when this power was enacted, there was greater impetus to re-educate stakeholders about changes in OPS fit and justify why such changes were necessary. This alleviated any dissatisfaction by staff about how the LEO team deferred to issues championed by powerful stakeholders (Welcomer et al., 2003).

Hence, the progress of using power to control the LEO project situation to facilitate OPS fit resolution is termed as reserving. Reserving power is to hold power back for future use for a special purpose. Thus, the priority is not for top management to dictate what to do in gathering suggestions and re-educating stakeholders, but rather to step in when the OPS fit was threatened. This underscores the message that power that is not exercised is generally insignificant, as influence is a materialization of power (Roomer & Wijen, 2006).

5.2.3.3.3 Disseminating Knowledge

Finally, it was found that knowledge was affected by the collaborating of identity, which connected it to action (Nag et al., 2007). As staff within a department developed a closer bond with their peers and the department as a whole, they were more inclined to share knowledge with them. For example, when new staff was

hired, senior staff proactively approached them to educate them on how to use LEO and what the RP direction entailed. One module chair even organized informal training sessions for all her new facilitators.

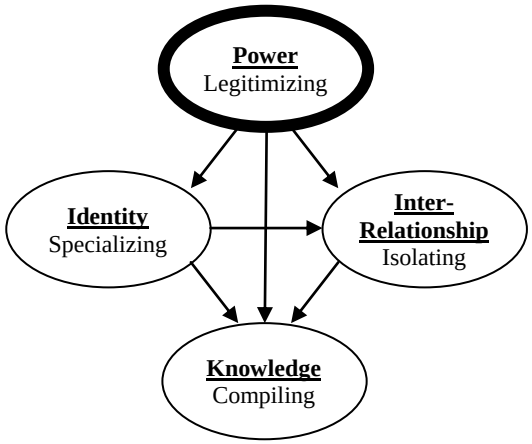
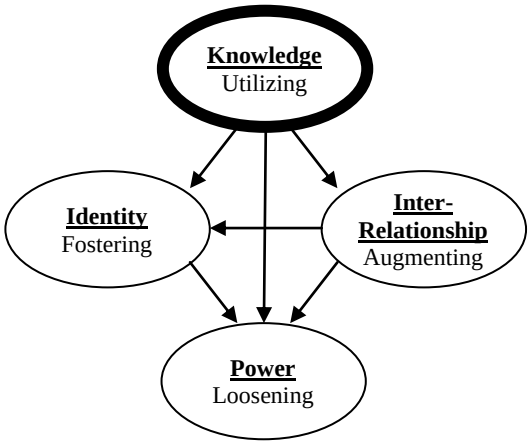
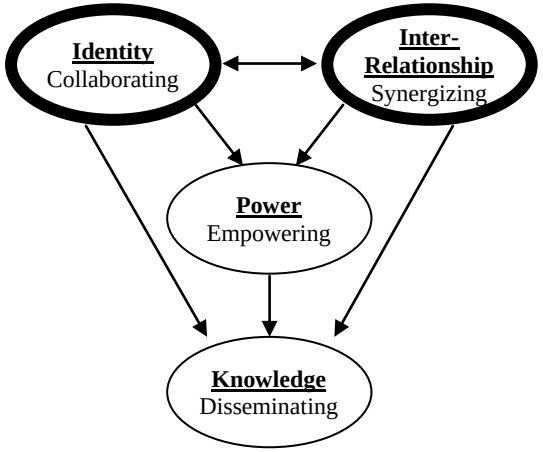
It was also found that knowledge was affected by the synergizing of inter-relationships. Previously, staff was inclined to submit personal suggestions to improve OPS fit, without considering whether others made similar suggestions or how their idea affected other stakeholders. However, as they developed closer links with their department peers, they became more willing to discuss ideas with their peers first and get feedback before officially submitting suggestions. This improved the quality of the suggestions so they were more likely to facilitate OPS fit, and eased the burden on the LEO team who received fewer unfeasible ideas.

Furthermore, it was found that knowledge was affected by the reserving of power. Perhaps the most pertinent example was the mode of deliverance of knowledge about OPS fit changes. The PM had the authority to decide whether a change warranted a formal training session, emails with step-by-step instructions, or no formal notification thus leaving staff to find out about the change themselves and share what they learnt with their peers. In another example, to improve the flow of knowledge through formal channels, staff was encouraged to send suggestions to the LEO team via the program chairs. As such, in some instances, such as if a suggestion was duplicated or went against the department's needs, the program chair had the authority to reject it and discuss it with the person who sent it.

Such activities underscored the role of knowledge in this phase. The role of knowledge in this phase involved gathering of feedback from staff on potential areas of OPS misfit and after changes were made, the conveyance of new knowledge about LEO and RP to relevant stakeholders to supplant their old knowledge. The ability to effectively manage this sharing of knowledge was contingent upon the stakeholders' ability and willingness to participate. Given this environment though, formal training sessions which had been advocated in prior ES literature (Robey et al., 2002), was generally less effective.

Hence, the process of using knowledge to control the LEO project situation to facilitate OPS fit re-education is termed as disseminating. Disseminating knowledge is to consolidate and distribute ES and organizational knowledge to and from stakeholders. The challenge is to provide infrastructure to support learning-by-doing (Sharma & Yetton, 2007) or learning via social interactions (Serafeimidis & Smithson, 2003), and encourage stakeholders to foster stronger links, and boost their identification and willingness to share knowledge.

Figure 9: A Conceptual Framework on Managing of OPS Fit during the Implementation of EBS in SPS

Phase	**Planning**	**Development**	**Post-Implementation**
Motivation	OPS Fit Ascertainment	OPS Fit Resolution	OPS Fit Re-Education
Leadership Style	Relationship-Forming Oriented	Task Oriented	Relationship-Leveraging Oriented
Focal Contingency Variable	Power	Knowledge	Identity and Inter-Relationship
Situational Control and Symbiotic Links among Contingency Variables			

A total of 12 contingency variables were identified in this analysis (see Table 6).

Table 6: Definitions of the Contingency Variables in Implementing LEO

Contingency Type	Contingency Variable	Definition
Power	Legitimizing	Formally acknowledge that a stakeholder has a legitimate right to influence another stakeholder and that the latter is obligated to accept this influence
	Applying	Put into action the legitimate power that key stakeholders possess
	Reserving	Hold power back for future use for a special purpose
Knowledge	Externalizing	Translate tacit knowledge into comprehensible explicit knowledge that is easily understood by everyone
	Utilizing	Maximize the full potential of consolidated knowledge from multiple sources
	Disseminating	Consolidate and distribute ES and organizational knowledge to and from stakeholders
Inter-Relationship	Connecting	Join and associate diverse stakeholders to establish a rapport so they can better understand each other's unique needs
	Augmenting	Get stakeholders to interact more frequently via existing links
	Synergizing	Enhance the links between different stakeholders so they willingly cooperate to achieve a mutually beneficial desired outcome
Identity	Specializing	Focus on an area of interest based on one's self-concept
	Reinforcing	Encourage people to strengthen and make their affiliations more pronounced
	Collaborating	Leverage off stakeholders' mutual support of the firm and ES to proactively work together for the welfare of the collective

5.3 Within-Case Analysis of Singapore Power Services' EBS Implementation

The within-case analysis of SPS' EBS implementation examined the symbiotic links between the four key contingency variables during the three phases of the EBS project. Again, in each phase, a different contingency variable took precedence and their symbiotic links varied. The activities and stakeholder

behaviour in each phase were also motivated by a different aspect of facilitating OPS fit and required a different leadership style. These results are summarized in a conceptual framework on managing OPS fit during the implementation of EBS in SPS (see Figure 9). The rest of this section elucidates this framework.

5.3.1 Planning Phase

5.3.1.1 OPS Fit Ascertainment Driven Motivation

During the planning phase, the motivation was for successfully locating areas of OPS misfit. For example, SPS learnt from its CMS project not to neglect the input and interest of any stakeholder (Adelakun & Jennex, 2002; Donaldson & Preston, 1995), as they could overlook key OPS misfits. Thus, in the EBS project, SPS identified all relevant stakeholders and balanced their needs. A Working Committee was set up with key top management staff, Process Owners, SPS' head of IS and key consultants. This provided a mix of views on all key OPS components. Top management staff understood SPS policies, Process Owners understood SPS business processes and liaised with external principals, the head of IS understood existing systems, and consultants understood the SAP package. This balanced their interests as everyone's voice was heard (Soh & Sia, 2005).

However, stakeholders had many interests, and simultaneously addressing all their needs was challenging (Jawahar & McLaughlin, 2001). For example, the BPDs included many personal or departmental needs. Thus, the Working Committee Chairman evaluated them separately with each Process Owner and collectively

with the Working Committee, before devising a strategy to delay non-critical functions until after go-live and develop several core functions using re-use items from CMS customized by internal IS staff. This helped address what OPS misfits existed and their order of resolution (Hong & Kim, 2002).

In view of the emphasis in this phase on stakeholder identification, and balancing and prioritizing their diverse needs, the main motivation in this phase is termed as ascertainment. For the motivating force of ascertainment to take precedence, management needs to be cognizant of the diversity of their stakeholders and try to understand their needs for a holistic picture of all areas of OPS misfit. Ascertainment results in laying the foundation for OPS fit facilitation by spotting and understanding OPS misfits between organizational functionality, package features and stakeholder needs (Dishaw & Strong, 1999; Hong & Kim, 2002).

5.3.1.2 Relationship-Forming Oriented Leadership Style

The key leaders in this phase were the MD, Working Committee Chairman and Process Owners. Due to stakeholders' initial apprehension to embark on this project given their negative experiences from the CMS project, the MD and Working Committee Chairman had to garner the necessary support and encourage stakeholders to work closely with one another. The Process Owners were salient during blueprinting, as they coordinated the efforts of their respective general users in preparing their BPDs and represented their respective departments during inter-department meetings to address issues regarding integrated processes.

These leaders mainly focused on establishing good interpersonal relations in this phase. For example, there was some initial friction between consultants and SPS users due to their different opinions and goals. Top management repeatedly spoke to both parties to encourage them to work closely with each other for the overall good of EBS. Then, when the need arose to reduce the BPDs, top management met representatives of all stakeholder groups so they could expound on why their requirements were crucial and discuss how to resolve this issue as a whole, rather than the Working Committee Chairman making an arbitrary decision.

The contingency theory of leadership model defines this style of leadership as being relationship oriented (Fiedler & Garcia, 1987). However, evidence from the case suggested that this definition was rather broad, as the focal point of this style of leadership did not merely revolve around maintaining relationships. Instead, at this juncture and given the diversity of stakeholders involved in the ES project, the focus for these leaders was largely on involving stakeholders in the activities in this phase to lay the foundation for fostering closer relationships between the leader and stakeholders, and among stakeholders. Thus, the leadership style in this phase can more accurately be defined as a relationship-forming oriented style.

5.3.1.3 Power-Centred Situational Control

5.3.1.3.1 Legitimizing Power

Given the motivation to facilitate OPS fit ascertainment due to the diversity of interests of the multiple stakeholders of EBS, SPS built on a SAP package to implement an organization-wide billing system that integrated business processes across SPS. Top management launched this project and consolidated the diverse requirements of SPS departments, and such use of institutionalized power in organizations has been advocated previously (Schneider, 2002). Thus, in this phase, power emerged as a primary contingency variable in controlling the underlying situational environment during the EBS project. Moreover, power affected the identity (Kochan & Rubinstein, 2000), inter-relationships (Nambisan & Agarwal, 1998) and knowledge (Volkoff et al., 2004) contingency variables.

In planning for the EBS implementation, the MD found delays in signing-off the BPDs and pinpointed that there was a lack of face-to-face meetings between SPS staff and consultants. Thus, the MD used his authority to make all relevant parties meet regularly face-to-face to go through the BPDs and resolve outstanding issues. Also during blueprinting, the Process Owners had the authority to veto proposed changes to their BPDs by the project team, as was seen when they delayed signing-off on the BPDs because they were unsatisfied with the document.

Such activities underscored the use of power to dictate the flow of activities in this phase. The use of power in this phase was multi-faceted. It was partly derived

from institutionalized power due to the hierarchical position (Wang et al., 2006) of SPS management staff, such as the MD, and partly from delegated authority by top management (Serafeimidis & Smithson, 2003), such as the Working Committee Chairman being empowered by the MD. This power enabled them to push other stakeholders to contribute towards the ascertaining of OPS misfits.

Hence, the process of using power to control the EBS project situation to facilitate OPS fit ascertainment is termed as legitimizing. The legitimizing of power is to formally dictate that a stakeholder has a legitimate right to influence another stakeholder and the latter has an obligation to accept this influence (French & Raven, 2004). It includes multiple types of power that are forms of legitimate power that are derived from the organizational management structure.

5.3.1.3.2 Specializing Identity

It was found that identity was affected by the legitimizing of power. Since Process Owners were empowered to delay signing-off the BPDs until they were satisfied, they could try and push through needs that matched their personal or departmental identities, even if these did not fit the needs of other departments or the package. Also, the Working Committee Chairman's delegated authority to oversee the project gave her the opportunity to resolve conflicting BPD requirements so they fit SPS' organizational functionality, which was in line with her collective identity.

Such activities underscored the role of identity in this phase. The role of identity in this phase was to define the roles and responsibilities of different stakeholders, in terms of their involvement in the EBS project and their spheres of ownership over SPS business processes. This enabled them to focus on their designated areas and provide in-depth insight on OPS misfits. The former related to their personal identity in terms of their self-interests and what they felt that they should or should not have to do, while the latter related to their relational identity and desire to procure benefits for their department and peers (Brickson, 2000; Flynn, 2005).

Hence, the process of using identity to control the EBS project situation to facilitate OPS fit ascertainment is termed as specializing. The specializing of identity is to devote oneself to an area of interest based on one's self-concept. This includes any narrow personal or departmental interests. At this juncture, except for certain top management staff, the interests of most stakeholders were not aligned with those of SPS as a whole (Rowley & Moldoveanu, 2003).

5.3.1.3.3 Isolating Inter-Relationships

It was found that inter-relationships were also affected by the legitimizing of power. At this juncture, SPS staff focused on their own silos of interests and had narrow fixed lines of communication. For example, in preparing the BPDs, general users worked with peers in their own departments then communicated their needs to their Process Owners who liaised with the project team. Moreover, it was found that inter-relationships were affected by the specializing of identity.

Process Owners submitted BPDs that focused on their personal or department's needs. So, to prioritize the BPDs, the Working Committee Chairman liaised with each Process Owner separately to understand and reduce their BPDs.

Such activities underscored the role of inter-relationships in this phase. The role of inter-relationships in this phase was to facilitate focused hub-and-spoke networks so stakeholders, such as top management, had dyadic ties with key stakeholders (Rowley, 1997) to interact with them without cross-influencing other stakeholders. This clarified their perspectives so OPS misfits could be noted.

Hence, the process of using inter-relationships to control the EBS project situation to facilitate OPS fit ascertainment is termed as isolating. The isolating of inter-relationships is to segregate stakeholder groups to manage them separately to best understand and cater to their different needs. Since interacting with each stakeholder has intrinsic value (Shankar et al., 2002), the leader's direct relationship with each stakeholder remains critically important (Schneider, 2002).

5.3.1.3.4 Compiling Knowledge

Finally, it was found that knowledge was affected by the legitimizing of power. Email correspondence caused delays in signing-off the BPDs so the MD made the consultants and Process Owner meet face-to-face. This allowed consultants to directly gather knowledge from SPS staff on what their BPDs entailed, while SPS staff directly gathered knowledge from the consultants on issues about their BPDs.

It was also found that knowledge was affected by the specializing of identity. Generally, SPS staff was worried that the new EBS system would not fully reflect their personal and departmental interests so they freely shared knowledge with the consultants on every aspect of their business processes so nothing was overlooked.

Furthermore, it was found that knowledge was affected by the isolating of inter-relationships. By interacting with stakeholders separately, the MD received multiple unbiased perspectives on EBS since the stakeholders were not influenced by other stakeholders. For example, he spoke to principals on their needs, discussed with general users about fears stemming from the CMS project, and travelled to Germany to meet SAP representatives to learn about package features.

Such activities underscored the role of knowledge in this phase. The role of knowledge in this phase was to facilitate the consolidation of diverse insight on each aspect of the ES so a balanced understanding of the situation was achieved to highlight potential OPS misfits. This alleviated knowledge asymmetries that may otherwise create knowledge barriers that inhibit adoption (Ko et al., 2005).

Hence, the process of using knowledge to control the EBS project situation to facilitate OPS fit ascertainment is termed as compiling. The compiling of knowledge is to gather and consolidate information from multiple sources in an orderly form. This information is gathered from tacit sources such as face-to-face meetings with general users and explicit sources such as the post-implementation

audit report of the CMS project, and was consolidated into explicit BPDs (Nonaka, 1994) to be analyzed so OPS misfits could be ascertained.

5.3.2 Development Phase

5.3.2.1 OPS Fit Resolution Driven Motivation

During the development phase, the motivation was for successfully devising and testing solutions to resolve the areas of OPS misfit that were identified. Prior literature termed this as post purchase tailoring (Soh & Sia, 2005). Evidence from the case seems to suggest though, that besides tailoring, the motivation for this phase also induces other pre and post tailoring activities. One example was the early involvement of all pertinent stakeholders in this phase. Users seconded to the project team had key SPS business knowledge and were tasked with writing the FD specifications, a task that was generally deemed too technical for end-users. This helped lay the foundation for checking the verity of proposed solutions, as the end-users picked up package knowledge and better understood how the package worked. Thus, they could more effectively assess whether the package fit SPS' needs, and explain to their peers why certain business requirements could or could not be addressed by the package.

The core activity in this phase was the development of the actual solutions to resolve OPS misfit. Typically, ES projects relied heavily on external consultants and the role of internal IS was diminished (Baskerville et al., 2000). However, in SPS, the decision was made to re-use existing CMS features for almost 50% of

EBS, and this was handled by internal IS since they were the most well versed with the heavily customized CMS. This exemplified the range of possible solutions to alleviate OPS misfits during an ES implementation.

Another example of the impact of the motivating force in this phase relates to evaluating proposed solutions. A consultant team managed data conversion from CMS to EBS and held seven rounds of mock conversions where general users evaluated the converted data over 24-hour cycle days. While studies on post-purchase tailoring discussed what package modification or organizational adaptation entailed (Al-Mudimigh et al., 2001), less attention was paid to evaluating the solutions. In SPS, this could be quite complex for an ES project so a command centre was even set up in SPS to facilitate the tight schedule and collaborative efforts of diverse stakeholders across different departments.

In view of the emphasis in this phase on developing a wide range of solutions to overcome the areas of OPS misfit and evaluating their effectiveness, the main motivation in this phase is termed as resolution. For the motivating force of resolution to take precedence, management needs to be open to different post-purchase tailoring solutions to cater to different OPS misfits, and involve a mix of stakeholders during the resolution process to fine-tune the solutions early in the development process and not just after the system is developed. This ensures the solutions alleviate OPS misfits by reconciling the technological imperatives of the ES package with the firm's business needs (Davenport, 1998; Umble et al., 2003).

5.3.2.2 Task Oriented Leadership Style

The key leaders in this phase were the Accenture PM, IS PM and User PM. As the focus shifted to ensuring that EBS was developed within the project deadline, top management staff took a back seat to mainly oversee project progress. The Accenture PM took a leading role in managing the activities in this phase. The IS PM managed her internal IS staff to adapt the re-use items. The User PM coordinated general user involvement and collaborations, particularly during UAT.

As the emphasis in this phase was on meeting tight deadlines and technically developing EBS, the leaders focused on completing key activities. For example, during FD, the Accenture PM was instrumental in designating roles and responsibilities to project team members. Thus, although the project team users were not technically trained, they were tasked with writing up the FD specifications, as his main concern was maximizing the manpower resources in the team. As for the IS PM, her main goal was to adapt the re-use items so she and her team focused on completing this task so interactions between them and other stakeholders were minimized, to the extent that they did not even keep abreast of what the consultants were developing until everything was almost completed and it was time to merge the two sets of features.

The contingency theory of leadership model defines this style of leadership as being task-oriented (Fiedler & Garcia, 1987). At this juncture of the project, given the tight deadlines the project team faced, and the technical and straightforward

nature of the activities, these leaders focused on task performance and putting into place the necessary structure and organization to facilitate this task completion.

5.3.2.3 Knowledge-Centred Situational Control

5.3.2.3.1 Utilizing Knowledge

Given the motivation to facilitate OPS fit resolution due to misalignments between SPS functionality, SAP package features and stakeholder needs, SPS used several solutions to alleviate OPS misfits. Given the diversity of solutions adopted, throughout this phase, different knowledge drove the development and evaluation of each solution. Knowledge is a bilateral dependency when the firm and external parties need the input of each other to succeed (Heiskanen et al., 1996), and evidence from this case showed such a multilateral dependency as stakeholders developed their respective solutions based on knowledge gleaned from other stakeholders. Thus, in this phase, knowledge emerged as a primary contingency variable in controlling the underlying situational environment during the EBS project. Moreover, knowledge affected the identity (Reich & Benbasat, 2000), inter-relationships (Kochan & Rubinstein, 2000; Schneider, 2002) and power (Kochan & Rubinstein, 2000) contingency variables.

The project team tapped onto the business knowledge of SPS staff, which was compiled into the BPDs, and prepared the FD specifications so they knew what to include in the system. Since internal IS staff was most conversant with CMS, they

were tasked with altering the re-use items before working with the project team to incorporate these features into EBS.

Such activities underscored the use of knowledge to dictate the flow of activities in this phase. After consolidating stakeholders' diverse knowledge, the challenge was how to maximize this knowledge to develop a comprehensive ES and rectify as many OPS misfits as possible. ES implementations require a wide range of knowledge (Davenport, 1998; Kræmmergaard & Rose, 2002) but the emphasis during development was mainly on capitalizing on end users' business knowledge and consultants' package knowledge (Wang et al., 2006). In contrast, the role of internal IS staff was considered to be diminished, especially in this phase, due to their lack of package knowledge (Brown & Vessey, 2003). This case highlights an example of how internal IS staff's knowledge may still be relevant.

Hence, the process of using knowledge to control the EBS project situation to facilitate OPS fit resolution is termed as utilizing. The utilizing of knowledge is to take advantage of the consolidated knowledge to its full potential. This is a key step towards raising stakeholder awareness and cultivating an environment in which they willingly cooperate and learn (Nah et al., 2001).

5.3.2.3.2 Augmenting Inter-Relationships

It was found that inter-relationships were affected by the utilizing of knowledge. Initially, the consultants were not well versed in SPS' business knowledge. So, as

they devised solutions based on the BPDs, they interacted closely with project team users and sometimes directly with general users to discuss the BPDs and get feedback on the feasibility of technical solutions. Internal IS staff and consultants initially worked independently to develop their parts of the EBS solution but subsequently interacted more frequently as they integrated their system features. This provided the opportunity for a closer working relationship so internal IS staff could learn about EBS' technical underpinnings and project management to prepare them to subsequently maintain the system after the cutover.

Such activities underscored the role of inter-relationships in this phase. The role of inter-relationships in this phase was to go beyond dyadic links between stakeholders and top management to flatten the project hierarchy and improve communication. For example, individuals developed closer ties with their immediate colleagues with whom they have more proximal relationships since they worked closely on a daily basis (Sluss & Ashforth, 2008). This helped stakeholders understand how their actions affected others (Robey et al., 2002). Moreover, knowledge was shared by different parties (Schneider, 2002), and since the joint value is greater than individual knowledge, it must be mobilized from many stakeholders (Kochan & Rubinstein, 2000).

Hence, the process of using inter-relationships to control the EBS project situation to facilitate OPS fit resolution is termed as augmenting. The augmenting of inter-relationships is to get stakeholders to interact more frequently with each other.

This increased the network ties that linked stakeholders compared to the total number of possible ties if every member was linked (Rowley, 1997).

5.3.2.3.3 Fostering Identity

It was found that identity was also affected by the utilizing of knowledge, as knowledge provided a behavioural frame for the manifestation and maintenance of the identity (Nag et al., 2007). Initially, there was some confusion as SPS staff did not understand why consultants could not implement certain features while consultants did not understand why SPS staff wanted certain business processes. However, with shared access to the knowledge they consolidated, both parties began to mutually appreciate each other's stance.

Moreover, it was found that identity was affected by the augmenting of inter-relationships. As Process Owners and project team users worked more closely with peers in other departments, they gleaned a more holistic understanding of each other's role in SPS and how they are inter-connected, thus causing a more collective identification with SPS rather than just with their own departments.

Such activities underscored the role of identity in this phase. The role of identity in this phase was to get stakeholders to see beyond their personal or departmental interests and understand how they are part of a bigger entity that is SPS, and should work toward SPS' benefit. This has the additional benefit of increasing stakeholder commitment to SPS, and by extension, EBS (Hardy et al., 2005).

Hence, the process of using identity to control the EBS project situation to facilitate OPS fit resolution is termed as fostering. The fostering of identity is to enhance mutual understanding about EBS and SPS so stakeholders converge and align their beliefs more closely with one another (Reich & Benbasat, 2000). This does not imply stakeholders are expected to work solely for the benefit of SPS to the exclusion of all else, but rather that they are aware of how some identities can be more salient in certain contexts than others (Pratt & Foreman, 2000).

5.3.2.3.4 Loosening Power

Finally, it was found that power was affected by the utilizing of knowledge. Since EBS was mainly developed based on the SAP package architecture, knowledge of the latest package version was important, and this was under the purview of the consultants. Thus, the Accenture PM was given a co-leadership role on Working Committee and was largely responsible for managing the project at this stage.

It was also found that power was affected by the augmenting of inter-relationships. In the previous phase, interactions were dyadic so top management derived power from being at the centre of information flow. However, as stakeholders interacted directly with one another, top management had less incentive to use hierarchical power and instead, other stakeholders such as the IS PM and User PM were given the authority to complete tasks in this phase, as they mainly had to guide and oversee project progress rather than dictate what needed to be done.

Furthermore, it was found that power was affected by the fostering of identity. Initially, SPS staff had to be cajoled and given directives by top management on what to do for this project, such as to appreciate the lack of business process knowledge of consultants and need to educate them. By this juncture, stakeholders achieved a more holistic understanding of EBS and SPS so there was less need for such top-down directives, as SPS staff was trusted to work on their own, as their contributions were less inclined to be disruptive to SPS or the project as a whole.

Such activities underscored the role of power in this phase. The role of power in this phase was to spread responsibility to govern the project to other stakeholders, as the emphasis shifted to task completion that required more guidance and less dictation. This provided the basis for greater stakeholder empowerment and autonomy (Schneider, 2002). Also, as key knowledge lay with more stakeholders, this increased each of their bargaining power (Kochan & Rubinstein, 2000).

Hence, the progress of using power to control the EBS project situation to facilitate OPS fit resolution is termed as loosening. The loosening of power is to relax tight top-down controls and dictating of what to do. This moves lower levels of decision-making and communication to where the work is done, thus improving process time and efficiency (Manganelli & Klein, 1994).

5.3.3 Post-Implementation Phase

5.3.3.1 OPS Fit Re-Education Driven Motivation

During the post-implementation phase, the motivation was for successfully disseminating relevant knowledge about the final system to ensure that stakeholders could effectively use it. This reinforced prior studies that advocated that knowledge should be transferred from a knowledgeable source so that it was learned and applied by recipients (Ko et al., 2005). Thus, in the EBS project, the re-education of relevant stakeholders took precedence, as multiple formal and informal channels were employed to disseminate pertinent information about EBS.

One example was the formal training conducted for general users. A select group of users were trained by the consultants as trainers, as general users were more inclined to internalize what was taught during training if it came from their peers. Formal sessions were common modes of knowledge dissemination and important drivers of success during ES projects (Lim et al., 2005; Robey & Boudreau, 2002). General users followed up this training by leveraging off close inter-relationships to informally approach project team members, such as consultants, internal IS staff or project team users, for clarification after training. Such sharing of tacit knowledge via social interaction enhanced organizational learning (Nonaka, 1994). Another example was the parallel run conducted by internal IS staff and involving SPS general users. This enabled internal IS staff to gain valuable experience in maintaining the system prior to the cutover. As for SPS general users, this allowed them to see the holistic system in operation, and learn how it fit their needs and

coincided with those of other departments. Besides formal training, such hands-on education encouraged learning practice-based knowledge embedded in the software that best emerged during use (Volkoff et al., 2004).

In view of the emphasis in this phase on knowledge sharing to update all relevant stakeholders about the new system, the main motivation in this phase is termed as re-education. For the motivating force of re-education to take precedence, management needs to advocate a flatter and better connected organization hierarchy to support formal and informal knowledge exchange, and create opportunities for knowledge to be exchanged. Re-education provides stakeholders with more reliable knowledge so they better understand how OPS misfits are resolved and consequently how the new system and workflow differs from the previous system, and enhances their operational efficiency (Howard et al., 2003).

5.3.3.2 Relationship-Leveraging Oriented Leadership Style

The key leaders in this phase were the MD, Working Committee Chairman and Process Owners. As the project approached culmination and cutover, and control of the project shifted back to SPS, the MD and Working Committee Chairman began to pay closer attention to the activities in this phase, and stimulating stakeholders and cementing their buy-in. Also, at this juncture, the general users became heavily involved as they prepared to take ownership of EBS, and the Process Owners coordinated their preparation and interactions.

These leaders facilitated these activities by leveraging off the inter-relationships that were generated during the project. For example, general users had a gruelling schedule during the parallel run and Process Owners had to brief them on the necessity for these runs. However, by this stage, the general users had a deeper understanding of EBS and why they should work with other departments. Thus, they were faster on the uptake to see the holistic picture, and willingly collaborate with their peers to ensure the tasks went smoothly due to the inter-relationships they had fostered. Subsequently, after go-live, general users were more willing and able to discuss issues with peers in other departments, and identify add-ons or improvements to EBS that benefitted the system as a whole for their department or on behalf of another department. This was often proactively advocated by the general users with minimal supervision from their Process Owners.

The contingency theory of leadership model defines this style of leadership as being relationship oriented (Fiedler & Garcia, 1987). However, again, evidence from the case suggests that this definition was rather broad, as the focal point of this style of leadership did not merely revolve around maintaining relationships. Rather, at this juncture, many inter-relationships were generated among EBS stakeholders so the focus for these leaders was largely on using these established inter-relationships to promote stakeholder self management so they more efficiently completed the activities in this phase. Thus, the leadership style in this phase can more accurately be defined as a relationship-leveraging oriented style.

5.3.3.3 Identity- and Inter-Relationship-Centred Situational Control

5.3.3.3.1 Collaborating Identity and Synergizing Inter-Relationships

Given the motivation to facilitate OPS fit re-education due to the need to ensure stakeholders understand and maximize their use of EBS, SPS encouraged stakeholders to accept greater ownership and responsibility for EBS. This was tackled as SPS tapped onto the budding affinity stakeholders felt with one another, EBS and SPS, as well as onto the regular interactions that stakeholders exhibited.

A collective identity moved stakeholders to collaborate with others for the benefit of SPS and EBS (Flynn, 2005), as seen in the proactive behaviour of SPS staff. Stakeholders exhibited understanding of how their actions affected others (Jones & Price, 2001), as seen in their increasingly conscientious behaviour while working with one another. Thus, in this phase, identity and inter-relationships were co-primary contingency variables in controlling the underlying situational environment during the EBS project. Moreover, identity affected the power (Ellemers et al., 2004) and knowledge (Rowley & Moldoveanu, 2003) contingency variables. Likewise, inter-relationships affected the power (Rowley, 1997) and knowledge (Serafeimidis & Smithson, 2003) contingency variables.

The strength of the collective commitment to ensure EBS success was evident during the dress rehearsals, as SPS staff was more willing to compromise to resolve OPS misfit issues. They stayed in nearby hotels to reduce travelling time, and missed holidays to promptly complete their tasks to minimize delays for the

project and other departments. After go-live, SPS staff felt that the mutual understanding of one another's business processes they developed during the project translated into a deeper understanding of each department's role in SPS.

Such activities underscored the use of identity to dictate the flow of activities in this phase. As more stakeholders collectively identified with SPS and EBS, they were more inclined to have a positive affect toward other SPS staff (Polletta & Jasper, 2001), and perceived greater interdependence and common fate with the rest of the collectivity (McEvily et al., 2003). This was prominent in this case, as EBS was an ES, which provided a tangible affirmation of this interdependence.

Hence, the process of using identity to control the EBS project situation to facilitate OPS fit re-education is termed as collaborating. The collaborating of identity is to leverage off stakeholders' mutual understanding of the firm and ES to proactively work together for the benefit of the entire collective. This contrasts with merely having a passive collective identity where they increase their organizational commitment (Dutton et al., 1994) or solidarity (Rowley & Moldoveanu, 2003), as it requires stakeholders to act on this collective identity.

In the planning phase, unresolved OPS misfits were promptly escalated to the Working Committee. However, during the parallel run, SPS staff was more inclined to proactively meet their peers in other departments and relevant project team members to resolve such issues before escalating to the Working Committee.

Likewise, in the past, when users faced issues, they would often liaise through and be heavily guided by their heads of department. After this project, when users faced issues with EBS, they were more inclined to directly approach internal IS staff and their peers in other departments to resolve the issue, and their department heads could adopt a more supervisory role.

Such activities underscored the concurrent use of inter-relationships to dictate the flow of activities in this phase. Stakeholders went from a hub-and-spoke network of dyadic relationships centred on top management to a more complex stakeholder web model (Pan, 2005) that showed their interdependence with other stakeholders (Donaldson & Preston, 1995). This was a reflection of the nature of the ES, as it also integrated business processes across different departments, thus providing a platform for greater connectivity among the stakeholders.

Hence, the process of using inter-relationships to control the EBS project situation to facilitate OPS fit re-education is termed as synergizing. The synergizing of inter-relationships is to have different parties interacting and cooperating advantageously for a shared desired outcome. Stakeholders saw that the inter-relationships they developed during the project ostensibly made them long-term partners in SPS (Gable et al., 2001). Their stakeholder web was an avenue for future OPS misfit resolution, as they could informally discuss issues without having to rely on rigid hierarchical channels of communication.

It was found that identity was affected by the synergizing of inter-relationships. During the parallel run, general users had some concerns about the necessity for these runs. Rather than waiting for top management to assuage these concerns, as done during the planning phase, Process Owners and project team users educated general users on why such runs were important. General users also more quickly appreciated the situation, strengthened their mutual understanding of the project, and collaborated with one another. They were more inclined to procure benefits for others in a group with whom they had relationships (Brewer & Gardner, 1996).

It was also found that inter-relationships were affected by the collaborating of identity. This was most evident during the final activities in this phase. As stakeholders' collective identification grew, they interacted more frequently and with more stakeholders. For example, the Working Committee met daily. The consultants and Process Owners of inter-related business processes held ad-hoc meetings to resolve OPS misfits. General users approached Process Owners, project team users, consultants, and internal IS staff when they had doubts, such as during the parallel run or dress rehearsal. These actions and interdependent relationships were motivated by mutual concern for the interests of others, especially if they conflicted with their own needs (Brewer & Gardner, 1996).

5.3.3.3.2 Empowering Power

It was found that power was affected by the collaborating of identity. By this juncture, the project team users shared a mutual understanding with the project

team and SPS top management about EBS and how it supported SPS. Also, as SPS staff, they were shared owners of the system. General users saw them as having a more holistic understanding of the system and thus had more credibility. So, general users deferred to the project team users when they had issues to clarify.

Moreover, it was found that power was affected by the synergizing of inter-relationships, as different stakeholders held central positions in the stakeholder network. For example, the consultants coordinated efforts during dress rehearsals so they had the power to guide others, while internal IS staff coordinated efforts during parallel runs so in that activity, they had the power to guide others.

Such activities underscored the role of power in this phase. The role of power in this phase was to enable core relevant stakeholders to manage the corresponding activity in which their ownership of EBS, or the affected part of EBS, was most pertinent. This increase in stakeholder self-management (Sarker & Lee, 2003) was a result of greater stakeholder endorsement by top management and it alleviated some of their burden of leadership.

Hence, the process of using power to control the EBS project situation to facilitate OPS fit re-education is termed as empowering. The empowering of power is to grant stakeholders the authority to manage themselves and their peers during activities that suit their abilities (Nambisan & Agarwal, 1998; Rowley, 1997). The

degree a stakeholder perceives an identity to be salient in a context determines the extent it affects one's behaviour in that context (Ellemers et al., 2004).

Evidence from the case expanded this notion to show that how other stakeholders perceived the salience of the stakeholder's identity in that context could affect the degree of authority accrued to that stakeholder and extent that others embraced his leadership. Alternatively, they could be empowered due to their close interactions with other stakeholders based on their local centrality, which is the number of ties a stakeholder has with others in a stakeholder web (Nambisan & Agarwal, 1998).

5.3.3.3.3 Disseminating Knowledge

Finally, it was found that knowledge was affected by the collaborating of identity. During the cutover, project team users walked the floor to help general users if they needed any clarification or assistance. This was because project team users had a more collective identity and holistic understanding of EBS and SPS so they could clear the doubts of general users and re-educate them on what EBS entailed.

It was also found that knowledge was affected by the synergizing of inter-relationships. SPS staff underwent formal training about EBS where they were re-educated on how EBS differed from CMS. This training was conducted by fellow general users who were trained as trainers. If staff had further doubts, they could easily informally approach project team users, internal IS staff or consultants.

Their ease of access to these multiple sources of knowledge was largely due to the relationships they had cultivated with them during the project.

Furthermore, it was found that knowledge was affected by the empowering of power. In preparing their go-live action plans, Process Owners met to share information on what they would be doing during the blackout period and cutover. While some of this information did not affect other departments, they still updated everyone. This was because they felt a sense of ownership of EBS and a shared desire to ensure it succeeded so they felt obligated to share as much knowledge as possible so everyone was as prepared as possible for system cutover.

Such activities underscored the role of knowledge in this phase. The role of knowledge in this phase was to facilitate the spreading of new knowledge about EBS to all relevant stakeholders to replace their previous knowledge about CMS. In addition, the aim was to convey more holistic knowledge about EBS so each stakeholder had a broader knowledge base, such as on how EBS features worked for them and other departments, and how EBS facilitated OPS fit. While prior emphasis was on knowledge exchange between external consultants and internal staff (Ko et al., 2005), this case highlighted how sharing of knowledge among internal stakeholders is equally pertinent (Kearns & Sabherwal, 2006-07). Moreover, this should be accomplished before the knowledge integrators depart (Liang et al., 2007; McGinnis & Huang, 2007).

Hence, the process of using knowledge to control the EBS project situation to facilitate OPS fit re-education is termed as disseminating. The disseminating of knowledge is to distribute core ES knowledge to all relevant stakeholders via formal and informal channels. The challenge was to maintain this, so members felt comfortable with knowledge (Pan & Scarbrough, 1999) and with sharing it.

A total of 12 contingency variables were identified in this analysis (see Table 7).

5.4 Integrative Summary of Within-Case Analysis

Integrating the within-case analysis of the cases of RP and SPS resulted in a tabular summary of the analysis (see Table 8) and an integrative summary framework to illustrate the process model of managing OPS fit during ES implementation (see Figure 10). The summary framework highlights three phases that capture the dynamics of OPS fit facilitation during the ES project (Sabherwal & Robey, 1995), which are represented by bold arrows. Each phase is governed by a key motivational direction, which induced a key leadership style and key situational control variable. Unlike the contingency theory of leadership model, which does not outline the underlying processes that result in effective performance (Fiedler & Garcia, 1987), this framework provides insight into this process via line-arrows that describe how the focal situational control variable affects other inter-related contingency variables.

Table 7: Definitions of the Contingency Variables in Implementing EBS

Contingency Type	**Contingency Variable**	**Definition**
Power	Legitimizing	Formally dictate that a stakeholder has a legitimate right to influence another stakeholder and the latter has an obligation to accept this influence
	Loosening	Relax tight top-down controls and dictating of what to do
	Empowering	Grant stakeholders the authority to manage themselves and their peers during activities that suit their abilities
Knowledge	Compiling	Gather and consolidate information from multiple sources in an orderly form
	Utilizing	Take advantage of the consolidated knowledge to its full potential
	Disseminating	Distribute core ES knowledge to all relevant stakeholders via formal and informal channels
Inter-Relationship	Isolating	Segregate stakeholder groups to manage them separately to best understand and cater to their different needs
	Augmenting	Get stakeholders to interact more frequently with each other
	Synergizing	Have different parties interacting and cooperating advantageously for a shared desired outcome
Identity	Specializing	Devote oneself to an area of interest based on one's self-concept
	Fostering	Enhance mutual understanding about EBS and SPS so stakeholders converge and align their beliefs more closely with one another
	Collaborating	Leverage off stakeholders' mutual understanding of the firm and ES to proactively work together for the benefit of the entire collective

During the planning phase, the OPS fit ascertainment motivation could be managed via a task oriented or relationship-forming oriented leadership style. In determining leaders' behaviour, the key situational control contingency variable was power, which was enacted through legitimizing. Legitimizing power in turn

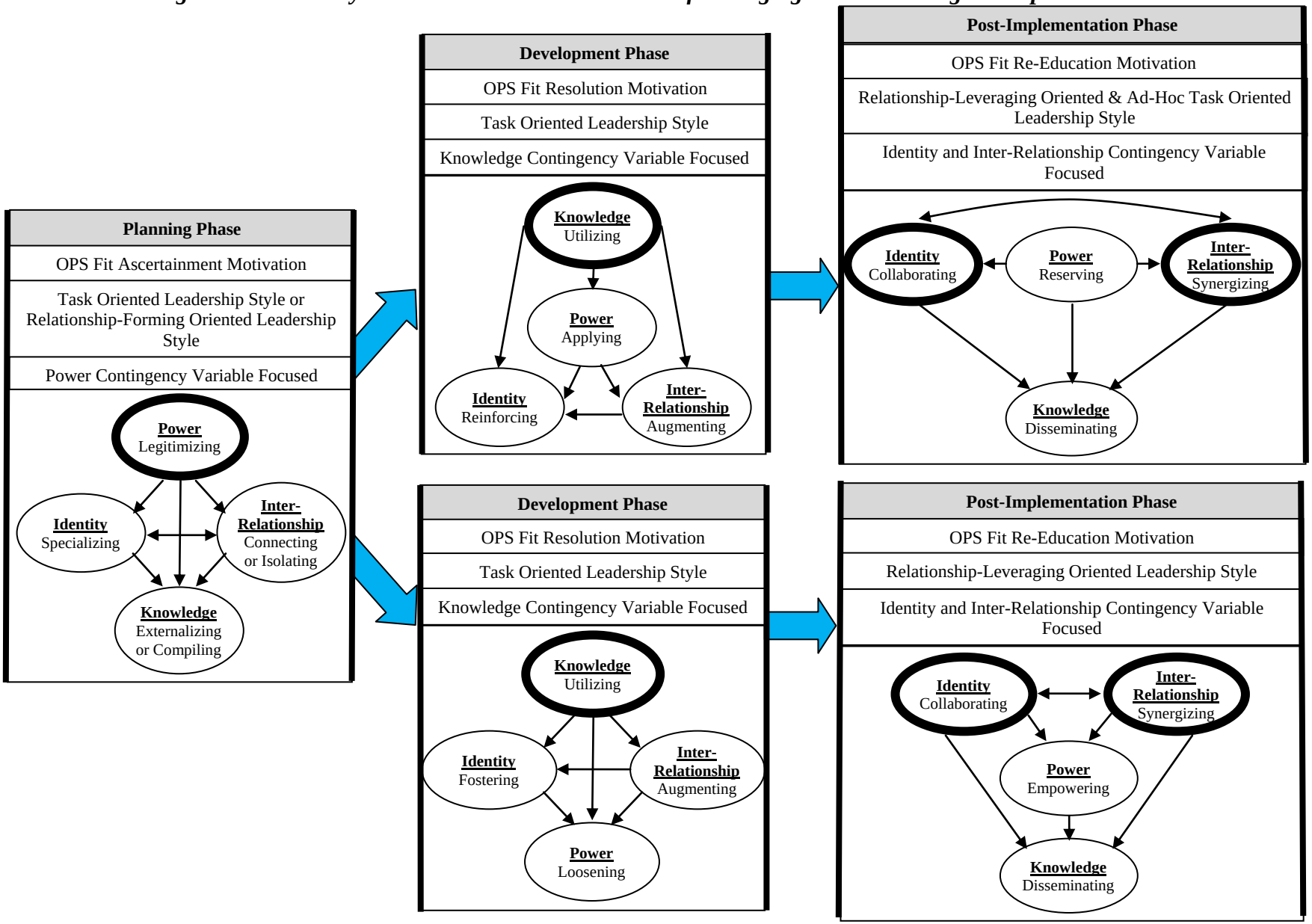
may affect the enactment of identity, inter-relationship and knowledge. Identity was enacted through specializing, and may affect the enactment of inter-relationship and knowledge. Inter-relationship was enacted through either connecting or isolating, and may affect the enactment of identity and knowledge. Knowledge was enacted through either externalizing or compiling.

Table 8: An Integrative Summary of RP & SPS Case Analysis

Phase	**Planning**		**Developing**		**Post-Implementation**	
Motivation	OPS Fit Ascertainment		OPS Fit Resolution		OPS Fit Re-Education	
Leadership Style	Task Oriented	Relationship-Forming Oriented	Task Oriented		Relationship-Leveraging Oriented & Ad-Hoc Task Oriented	Relationship-Leveraging Oriented
Situational Control	Power Centred		Knowledge Centred		Identity- and Inter-Relationship Centred	
Power Contingency Variable	Legitimizing		Applying	Loosening	Reserving	Empowering
Knowledge Contingency Variable	Externalizing	Compiling	Utilizing		Disseminating	
Inter-Relationship Contingency Variable	Connecting	Isolating	Augmenting		Synergizing	
Identity Contingency Variable	Specializing		Reinforcing	Fostering	Collaborating	

During the development phase, the OPS fit resolution motivation could be managed via a task oriented leadership style. In determining leaders' behaviour, the key situational control contingency variable was knowledge. The process of enacting the contingency variables could assume one of two forms.

Figure 10: Summary Framework - A Process Model of Managing OPS Fit during ES Implementation



In the first form, knowledge was enacted through utilizing. Utilizing knowledge in turn may affect the enactment of power, identity and inter-relationship. Power was enacted through applying, and may affect the enactment of identity and inter-relationship. Identity was enacted through reinforcing. Inter-relationship was enacted through augmenting, and may affect the enactment of identity.

In the second form, knowledge was again enacted through utilizing, which similarly may affect the enactment of identity, inter-relationship and power. Identity was enacted through fostering, and may affect the enactment of power. Inter-relationship was enacted through augmenting, and may affect the enactment of identity and power. Power was enacted through loosening.

Finally, during the post-implementation phase, the OPS fit re-education motivation could assume one of two forms. In the first form, this motivation could be managed via a relationship-leveraging oriented leadership style with an ad-hoc task oriented leadership style. In determining leaders' behaviour, the key situational control contingency variables were identity and inter-relationship. Identity was enacted through collaborating. Collaborating identity in turn may affect the enactment of inter-relationship and knowledge. Inter-relationship was enacted through synergizing. Synergizing inter-relationship in turn may affect the enactment of identity and knowledge. In ad-hoc situations, power was enacted through reserving. Reserving power in turn may affect the enactment of identity, inter-relationship and knowledge. Knowledge was enacted through disseminating.

In the second form, this motivation could be managed via a relationship-leveraging oriented leadership style. In determining leaders' behaviour, the key situational control contingency variables were again identity and inter-relationship. Identity was enacted through collaborating. Collaborating identity in turn may affect the enactment of inter-relationship, power and knowledge. Inter-relationship was enacted through synergizing. Synergizing inter-relationship in turn may affect the enactment of identity, power and knowledge. Power was enacted through empowering. Empowering power may in turn affect the enactment of knowledge. Knowledge was enacted through disseminating.

This process model of managing OPS fit during ES implementations offers a theoretical sense making lens for researchers of ES implementations. It also provides a practical guide for practitioners of ES implementations.

6 Cross-Case Analysis: Findings and Discussion

To understand the process of managing OPS fit during ES implementation and address the research question of "how can OPS fit be managed in the implementation of Enterprise Systems", a cross-case analysis of the RP and SPS cases was conducted. This analysis was conducted using stakeholder management and the contingency theory of leadership as the theoretical lens. A total of four main findings were identified and are discussed in this chapter.

6.1 Finding 1: Unpacking the Process of Managing OPS Fit during ES Implementation

Based on the cross-case analysis, it was shown that the management of OPS fit in ES implementation was a three-phased process involving OPS fit ascertainment, resolution, and re-education. Each phase was governed by a different motivation, and involved a different focal contingency variable with different links to other contingency variables, which moderated the use of a different leadership style.

ES implementations are challenged by misfits between organizational needs and ES packages' best practices (Umble et al., 2003), compounded by the multiple stakeholders of ES projects (Koch, 2001). Studies called for more research on the fit between organizational functions, package features and stakeholder interests (Cale & Eriksen, 1994). Evidence from the cases suggested that this was alleviated through effective management of OPS fit and the stakeholders of the ES project. Managing this effectively is also contingent upon the matching of leaders' leadership styles and situational control (Fiedler, 2005). In addition, most ES research was based on static snapshots of a cross-section of the implementation cycle rather than tracing the dynamic moving target of alignment (Hong & Kim, 2002; Venkatraman, 1989), whereas evidence from the cases identified three phases in the process of managing OPS fit during ES projects.

Evidence from the cases showed that the first phase in this process was OPS fit ascertainment. This involved identifying what each of the three components of

OPS entailed and outlining areas of misalignment. This addressed calls for more models to explore what gaps in fit need to be addressed (Reich & Benbasat, 2000). Evidence from the cases emphasized that given the organization-wide impact of ES, top management had to be a key central driving force in this phase to coordinate efforts in outlining organizational requirements, understanding the needs of stakeholders and evaluating the features of external packages. This laid the foundation for the OPS fit management strategy to be used later in the project.

Evidence from the cases showed that the second phase in this process was OPS fit resolution. This involved finding solutions to alleviate OPS misfits by modifying one or more of the three components of OPS. This could entail changing business processes (Pollock et al., 2003), the package (Kutar & Light, 2005) or using workarounds (Gattiker & Goodhue, 2005). While all possible solutions should be considered to ensure the best possible fit, evidence from the cases underscored the need for an OPS fit resolution strategy to outline an OPS fit management direction. For example, RP decided to rely heavily on package modification which provided greater leeway in incorporating the needs of RP and its stakeholders, while SPS opted for changes to business processes and minimal package customization.

Evidence from the cases showed that the third phase in this process was OPS fit re-education. This involved ongoing gathering of feedback from stakeholders to fine-tune OPS fit and re-educating of stakeholders on the changes to ensure OPS fit so they acquired a deeper understanding of OPS fit and affinity with the ES and

firm. Since knowledge was often dispersed across multiple stakeholders during ES projects (Jones et al., 2006), re-distributing this knowledge among stakeholders boosted their holistic understanding and enhanced their contributions to improve OPS fit. Increasing stakeholder involvement had the added benefit of escalating stakeholder buy-in. This was intensified by their burgeoning identification with their departments and firm, and inter-relationships, which enhanced their willingness to contribute towards improving OPS fit.

The cross-case analysis identified this three-phased process for managing OPS fit during ES projects involving OPS fit ascertainment, resolution and re-education. This answered the call for more research on OPS fit (Cale & Eriksen, 1994) by addressing the lack of stage models in IS research that describe the facilitation of OPS fit during an ES implementation. The analysis also provided insight into the leadership style required and links between the contingency variables moderating that style during each phase of this process. In general, this emphasized how OPS fit management is an ongoing process (Hong & Kim, 2002). The ascertainment phase also specifically addressed calls for more insight into what and how gaps in fit can be identified (Reich & Benbasat, 2000). The fit resolution phase reinforced the importance of post-purchase tailoring (Soh & Sia, 2005) and provided additional insight into different tailoring strategies that companies can employ. The re-education phase reiterated the importance of re-distributing distributed ES project related knowledge (Jones et al., 2006) but suggested the need to move

beyond formal training advocated in ES literature (Robey et al., 2002) and explore the facilitation of on-the-job and peer learning instead.

6.2 Finding 2: Key Leadership Styles in Managing OPS Fit during ES Implementation

Based on the cross-case analysis, three pertinent leadership styles emerged for managing OPS fit during ES implementation: task, relationship-forming and relationship-leveraging oriented. It was noted that each style was instrumental in a different phase and under different circumstances during ES implementation.

Prior literature highlighted that the quality of leadership is a key factor in determining success (Fiedler & Garcia, 1987). The contingency theory of leadership model identified two leadership styles: task oriented and leadership oriented (Fiedler, 2005). However, while this model noted that different styles are relevant in different environmental situations (Fiedler & Garcia, 1987), it stopped short of explaining what conditions affected the relevance of each style, particularly when managing OPS fit during ES implementation.

Evidence from the cases underscored the importance of task oriented leadership when the emphasis was on performing a task, such as resolving OPS fit. This concurred with prior research that the task oriented leader gain satisfaction and self-esteem from successfully completing a task (Utecht & Heier, 1976). In both cases, this was relevant during development as the main focus was on ensuring

OPS fit and rolling out the system. This created a dichotomy in this phase. On the one hand, leaders focused on task completion since rolling out the ES was important but to facilitate this, the main emphasis was on consolidating and maximizing the knowledge of multiple ES stakeholders, which several researchers suggested, may be a social process due to the exchange of tacit knowledge (Serafeimidis & Smithson, 2003). To overcome this disparity, evidence from the cases suggested using knowledge exchange methods such as email questionnaires with fixed deadlines or tightly controlled tacit knowledge exchange sessions such as formal information-gathering sessions with a sample population.

Task oriented leadership was especially relevant in the RP case, as it was also the main style used in planning and was employed in an ad-hoc manner during post-implementation. This was largely due to the close control by the OAA Director and PM over the LEO project, despite attempts in both phases to encourage stakeholder participation in the project. This seems to imply a correlation between top management control and a preference for the task oriented leadership style.

In addition, evidence from the cases underscored the importance of relationship oriented leadership if the emphasis was on stakeholder interactions, particularly since an ES project involves numerous internal and external stakeholders. This concurred with prior research, that the relationship oriented leader is concerned with good interpersonal relations and gaining prominence through these relations (Utecht & Heier, 1976). Evidence from the cases though, suggested that a generic

relationship oriented style may be an overly simplistic concept and suggested two types of relationship orientation: relationship-forming and relationship-leveraging.

The relationship-forming style was evident during planning in the SPS project, as emphasis was on strengthening the inter-relationships between key management figures and individual stakeholders. A hub-and-spoke model seemingly portrays stakeholders as existing in a vacuum of dyadic relationships (Rowley, 1997) in ES implementations. However, in actuality, this was seen to be merely the first step in forming a stakeholder web, as top management understood stakeholders' interconnectivity needs and could foster a more conducive environment for them to interact. This was in contrast to the relationship-leveraging style, which was premature at this juncture since stakeholder bonds were weak or non-existence so greater top management guidance was still necessary.

In both cases, the relationship-leveraging style was relevant during post-implementation as the system was rolled out and attention shifted to addressing and fine-tuning outstanding OPS fit issues. Unlike the relationship-forming style, this was only possible if a stakeholder web of relationships was present. Otherwise, the leader has difficulty relying on stakeholders to manage themselves and freeing the leader from micromanaging them. In the RP project though, less initial effort, particularly during development, was made to foster stakeholder inter-relationship so there was still a need for top management guidance during post-implementation to facilitate stakeholder inter-relationships.

The cross-case analysis identified three leadership styles – task, relationship-forming and leadership-leveraging – and provided insight into when each style takes precedence in managing OPS fit during the ES project. For example, in the RP case, the OAA Director was more task oriented while the PM was more relationship oriented, and in the SPS case, the Accenture PM was more task oriented while the Working Committee Chairman was more relationship oriented. This analysis builds on the contingency theory of leadership by suggesting that the original relationship leadership style was too broad a concept, and more narrow derivatives of this style were necessary for different stages of the OPS fit facilitation process. In addition, the contingency theory of leadership focused more on distinct situations that required a single leadership style. Instead, this study provided a more holistic view to show how processes consisted of multiple situations so a mix of leadership styles was needed. This provided an alternative solution to prior research claims that leaders should maintain their leadership style and modify the situational control to suit their style (Fiedler & Garcia, 1987), by suggesting that ES projects could have shared leadership (Carson et al., 2007) via a team of leaders to get the requisite mix of leadership styles. Leadership could thus be seen as a process that could be shared and mutually enacted among group members (DeRue & Ashford, 2010). This was in line with studies that suggested that top management teams with a balanced combination of leaders were more successful (Zhang & Faerman, 2007).

6.3 Finding 3: Contingency Variables that Moderate Leadership Style to Support OPS Fit Management during ES Implementation

Based on the cross-case analysis, four contingency variables emerged as pertinent in moderating leadership styles to manage OPS fit during ES projects: power, knowledge, identity and inter-relationship. All these variables were relevant and inter-related in every phase. However, in each phase, different variables served as the focal point to coincide with the motivation for that phase. In addition, in each phase, the links between and enactment of the variables varied as well.

Situational control moderates the correlation between leadership style and performance (Mitchell et al., 1970). The theory though, did not explain the underlying processes that result in effective performance (Fiedler & Garcia, 1987). The contingency theory of leadership deemed three major variables as relevant (Utecht & Heier, 1976) but studies suggested that the variables may be irrelevant or insufficient for certain contexts (Fiedler, 2005; Utecht & Heier, 1976).

Evidence from the two cases showed that two of the variables from the contingency theory of leadership were relevant to this study – leader-member relations and power – but suggested expanding their scope to fit this context. Evidence from the cases suggested that leader-member relations was too narrow in scope, as all stakeholder interactions were found to be relevant and not just the

dyadic ties between the leader and each member. So, the stakeholder inter-relationships variable was incorporated into this framework instead.

Evidence from the cases suggested that power was also too narrow in scope, as it mainly focused on the legitimate authority of top management. Instead, the cases showed that other types of power, such as delegated power, were also relevant, and power could be accrued to other stakeholders besides the leader. So, the stakeholder power variable was incorporated into this framework instead.

There was no evidence in this study to support the third original variable from the contingency theory of leadership – task structure – so it was omitted. Finally, evidence from this study showed support for two other contingency variables – stakeholder identity and knowledge management – so they were added to the framework. No other variables were prominently identified in this study.

Evidence from the cases highlighted how in each phase, different variables ascended to a focal position in controlling the situation in that phase, unlike in the contingency theory of leadership where each variable was given equal weightage. Power was dominant in planning, knowledge in development, and identity and inter-relationships in post-implementation. Power supported both a task and relationship-forming leadership style depending on whether there was a prevalent sense of identity among stakeholders. Presence of this identity necessitated the managing of relationships as stakeholders were more inclined to collaborate to

identify OPS misfits. Its absence meant that the focus was on task completion while an identity was created so the process was top-down driven. Knowledge management necessitated a task oriented style since the focus was on the fixed task of sharing and using knowledge to solve OPS fit issues. Identity and inter-relationships were inseparable during all phases in both cases, and necessitated a more relationship-leveraging style since the focus was on social interactions and affinity, as stakeholders learnt about OPS fit and contributed ideas to improve it.

Evidence from the cases also underscored how the four contingency variables were inter-related and each variable affected several others. These links between variables varied according to the key motivation of that phase and case context. This provided deeper understanding, as the contingency theory of leadership did not elaborate on the dynamic links between its three variables. For example, during planning, inter-relationships affected identity in RP since the initial focus was on building links between stakeholders before fostering shared understanding and a more collective identity. In contrast, identity affected inter-relationships in SPS since it was a more mature firm so staff better appreciated organizational identity and were more willing to work closely with one another.

Evidence from the cases showed that each variable was enacted in different ways in different phases of the project due to the different focal contingency variables and links between variables in each phase. For example, in SPS, power was enacted during planning by legitimizing it to formally dictate the roles and

authority of key stakeholders. Then in development, power was enacted by loosening it to relax top-down governance. Finally, in post-implementation, power was enacted by empowering other stakeholders, such as staff, so they could proactively help self-manage OPS fit. This analysis highlighted how organizations could enact the moderation of a leadership style by a contingency variable in 17 ways, depending on the task motivation in each phase (see Table 9).

While prior literature questioned the relevance and sufficiency of the variables of the contingency theory of leadership (Fiedler, 2005), there has been little consensus on what variables are suitable for different contexts. This study helps to plug this gap for the context of managing OPS fit during an ES implementation by identifying four contingency variables – power, knowledge, identity and inter-relationships – that were pertinent in moderating leadership style in this process. Furthermore, in this context, this study showed how the original contingency variables of leader-member relations and power were overly focused on the project leader, and suggested that these variables take into account other stakeholders as well. In addition, this study reinforced prior claims that the third task structure variable may not be relevant in firms where structural rigidity was the norm (Utecht & Heier, 1976), as in the two cases of this study. Instead, this study suggested two other contingency variables – identify and knowledge management – that could be added to the contingency theory of leadership when applied to this context. This study also addressed the limitation of the theory in showing the dynamism of this model in the context of managing OPS fit in ES

implementation and explaining the underlying processes that contribute to effective performance (Fiedler & Garcia, 1987). This was achieved by showing the different links between the variables, and how a different variable was focal and each variable was enacted in a different way during each phase.

Table 9: Matrix of Enactment of Contingency Variables to Moderate Leadership Style in Different Phases of OPS Fit Management during ES Implementation

Motivation	**OPS Fit Ascertainment**		**OPS Fit Resolution**		**OPS Fit Re-Education**	
Leadership Style Orientation	**Task**	**Relationship-Forming**	**Task**		**Relationship-Leveraging and Ad-Hoc Task**	**Relationship-Leveraging**
Power Contingency Variable	Legitimizing		Applying	Loosening	Reserving	Empowering
Knowledge Contingency Variable	Externalizing	Compiling	Utilizing		Disseminating	
Identity Contingency Variable	Specializing		Reinforcing	Fostering	Collaborating	
Inter-Relationship Contingency Variable	Connecting	Isolating	Augmenting		Synergizing	

6.4 Finding 4: Alternative Paths of Stakeholder Management to OPS Fit Re-Education in ES Implementation

Based on the cross-case analysis, stakeholder management was pertinent for supporting OPS fit facilitation. In both cases, stakeholders were managed differently in each phase of the ES projects. The path of stakeholder management for each case differed as well, and this led to different results during OPS fit re-

education. However, given the perceived success of both projects by their respective stakeholders, adoption of either path was apparently neither right nor wrong, but rather dependent on the desired outcome during post-implementation.

ES projects can be considered socio-technical challenges (Brown & Vessey, 2003) involving multiple stakeholders (Soh & Sia, 2005). Managing these stakeholders is a challenge plaguing firms implementing ES. Moreover, researchers advocate that comprehensive stakeholder analysis should go beyond explaining stakeholder influences to study how firms respond to these influences (Rowley, 1997). In both cases, this entailed appropriate management in every phase of ES implementation.

Evidence from the cases showed some emphasis on stakeholder management during planning with several slight differences. RP was a fledgling institute without an established collective identity so they focused on boosting stakeholder interactions to build up their identity. SPS was a mature firm with established organizational and relational department identities so they were already leveraging off them to boost stakeholder inter-relationships for their ES project.

However, during development, the stakeholder management paths undertaken by both companies diverged in response to the need to focus on the task of OPS fit resolution. In RP, stakeholder inter-relationships and affinity with RP was still growing, so RP relied more on top management power to govern the activities in this phase. In SPS, there were indications that stakeholders were maturing in

terms of a budding collecting identity and tightening stakeholder web, so SPS gradually loosened top management's micro-management of their stakeholders.

Finally, during post-implementation, the stakeholder management paths continued to diverge due to the actions in the previous phase, although the underlying emphasis was similar. Both organizations wanted stakeholders to interact more and adopt a collective identity to proactively learnt about and contribute towards managing OPS fit. In RP, there was still top-down monitoring since stakeholders were not deemed ready for self-management, although actual top management involvement was limited to an ad-hoc basis. In SPS, most stakeholders had a collective or department-wide identity and were strongly interconnected, so top management felt more secure in letting them proactively manage themselves.

This study addressed calls for more ES research to re-focus on people issues (Huang et al., 2003), and the challenge of identifying a standard organizational solution to manage all stakeholders' needs (Wagner & Newell, 2004). This study helped to plug these gaps in ES implementation research by explicitly identifying two paths of stakeholder management; one leading to ad-hoc top management monitoring and the other to stakeholder self-management. Both paths were effective in their respective contexts and this seemed to indicate that stakeholder management was contingent on the desired management style. Organizations which advocated top-down control over their organizational direction could emulate the RP path, while firms which advocated bottom-up stakeholder self-

management in line with the organizational direction could emulate the SPS path. The divergence in paths occurred early in the ES project so firms had to select a path early in the project and once a path was taken, it became harder for the organization to switch paths later in the project. In addition, this study addressed calls to explain how firms respond to stakeholder influences (Rowley, 1997) by describing how stakeholders were managed during each phase of the process of managing OPS fit during an ES implementation, particularly with respect to their power, knowledge, identity and inter-relationships. Concurrently, unlike prior research that separately focused on either stakeholders' individual characteristics or relational data, this study suggested that effective stakeholder management should both individual and relationship aspects of stakeholders.

7 Conclusion

The market for ES packages is booming (Markus & Tanis, 2000), and the business world's embrace of ES may be the most important development in the corporate use of IT in the 1990s (Davenport, 1998). They offer many benefits, including access to real-time information (Robey et al., 2002), enhanced strategic decision making (Bingi et al., 1999), and closer cooperation (Hirt & Swanson, 1999) and interdependencies (Ross & Vitale, 2000) among departments.

Numerous studies showed that ES projects can be challenging (Sheu et al., 2004). One challenge is that these external packages embody best business practices that may not fit organizational needs (Sia & Soh, 2007). Another challenge is that ES

implementations involve multiple stakeholders (Koch, 2001) with interests that differ and may even be in conflict (Light, 2005) with other stakeholders' interests, organizational needs and package features. Consequently, there are calls for more research to address gaps in OPS fit (Wu et al., 2007), which this thesis attempted to investigate. Specifically, the research question of "how can OPS fit be managed in the implementation of Enterprise Systems" was addressed.

Within-case and cross-case analysis of RP's implementation of LEO and SPS' implementation of EBS were conducted in this thesis. The within-case analysis analyzed empirical data on managing OPS fit in the ES implementations using the sense-making lens (Walsham, 1995) of contingency theory of leadership (Fiedler, 2005), and the stakeholder management related contingency variables of power (Coakes & Elliman, 1999), knowledge (Ko et al., 2005), identity (Rowley & Moldoveanu, 2003) and inter-relationship (Friedman & Miles, 2002). This led to the development of two conceptual frameworks on managing OPS fit in the implementation of RP's LEO system (see Figure 8) and SPS' EBS system (see Figure 9). A cross-case analysis of both cases then led to a summary framework of a process model of managing OPS fit in ES implementation (see Figure 10).

This analysis found that managing OPS fit during ES implementation consisted of three phases: ascertainment, resolution and re-education (Finding 1). The analysis unpacked this process to provide hitherto missing insight into the temporal aspects of the dynamic activities that occurred. In addition to a different motivation, it

was found that each phase necessitated a different leadership style, which was moderated by a different focal contingency variable with a different interplay with the other relevant contingency variables.

This analysis also found three key leadership styles employed in the different phases of the process of managing OPS fit during ES implementation: task, relationship-forming and relationship-leveraging oriented (Finding 2). Given the differing motivation in each phase, it was shown that a single management style was inappropriate if consistently applied throughout the process. Rather, it suggested that different styles were needed, which could be derived from a team of co-leaders, and pertinent insight was provided on each style.

In addition, this analysis found that the leadership style to manage OPS fit during ES projects was moderated by four contingency variables: power, knowledge, identity and inter-relationship (Finding 3). These variables were dynamic and a different variable was the focal point for each phase in conjunction with its motivation. 17 ways in which the contingency variables moderated leadership style were identified (see Table 9), and the interplay between these variables differed across each phase, reflecting the key activities and goals in that phase.

Finally, this analysis found two alternative paths of stakeholder management to OPS fit re-education in ES implementation (Finding 4). One path had less initial emphasis on developing stakeholder independence while the other path had more

emphasis on fostering stakeholder self-governance. This led to a split in the paths taken during the development and post-implementation phases. However, rather than claiming one path is superior to the other, this analysis showed that both paths were equally successful contingent upon the different style of stakeholder management that the organization hoped to achieve in the end.

In answering the research question, these findings resulted in several implications for theory and practice, which are discussed in the following sub-sections before this section concludes with several limitations of this study and suggestions for future research directions.

7.1 Theoretical Implications

Two main areas of theoretical implications were derived from the findings of this study: management of OPS fit during ES implementation, and the contingency theory of leadership. These areas are discussed in further detail below.

7.1.1 Managing OPS Fit during ES Implementation

The findings of this study contributed towards describing and theorizing OPS fit management during ES projects, which was the main thrust of this thesis.

Most ES research was based on static snapshots of a cross-section of the ES implementation life cycle (Pollock et al., 2003) so researchers called for more studies on the dynamic moving target of alignment (Venkatraman, 1989). Stage

models partly address this issue by describing ES implementation processes (Markus & Tanis, 2000; Parr & Shanks, 2000) but they typically emulate generic traditional project management metrics (Robey et al., 2002). In contrast, there is limited research on unique ES implementation process challenges, which are noticeably more complex than traditional IS projects (Luo & Strong, 2004).

This study focused on the process of managing OPS fit, a challenge unique to ES implementation, and developed a three-phased process model of managing OPS fit involving ascertainment, resolution and re-education. This went beyond generic IS implementation issues to provide greater insight into the unique challenges faced in each ES implementation phase.

Researchers long focused on the gulf between organizational functionality and package features (Dishaw & Strong, 1999) but while they typically discuss the factors affecting fit (Hong & Kim, 2002), less attention is paid to alleviating these misfits. Studies also acknowledged the importance of the social dimension of alignment (Reich & Benbasat, 2000) but the importance of stakeholders is undermined in ES practice (Papazafeiropoulou et al., 2002). Most pertinently, the concurrent fit between all three areas – organization functionality, package features and stakeholder needs – was rarely studied. This led to calls for more research on addressing OPS misfits to enhance performance (Wu et al., 2007).

This study addressed this gap in ES implementation research by showing how managing OPS fit was an ongoing challenge during ES implementation and it could conceivably be considered a driving force in ES implementation. During planning, the motivation was to identify organizational functionality, package features and stakeholder interests, and ascertain possible areas of misfit between them. During development, the motivation was to find a solution to resolve these misfits, such as by reengineering business processes, modifying the package or getting stakeholders to change their interests. During post-implementation, the motivation was to fine-tune OPS misfits and re-educate stakeholders on the changes. This entailed teaching stakeholders about new package features and organizational processes, or why their interests could not be addressed.

In addition, there was heavy emphasis on stakeholder management during this process. Prior studies noted that ES projects could be considered socio-technical challenges (Brown & Vessey, 2003) due to the multitude of stakeholders involved (Rosemann & Watson, 2002). Prior research though, focused on individual or dyadic pairs of stakeholders, with little emphasis on managing all relevant stakeholders. Researchers thus called for studies to re-focus on the people involved in ES implementations rather than technical issues (Huang et al., 2003).

To answer this call, this study adopted the contingency theory of leadership as a theoretical lens. Using this lens, this study showed how different stakeholders took precedence in different phases of ES implementation depending on the

respective motivation to manage OPS fit. Hence, different leadership styles, and correspondingly different stakeholders, were required to manage stakeholders accordingly in each phase (Carson et al., 2007). These styles though, were moderated by stakeholders' individual effect on the ES project based on their power, knowledge and identity, and as a group based on their inter-relationships.

Power was initially instrumental in dictating which stakeholder had the legitimate right to influence others. Subsequently, the application of power varied depending on the desired final outcome. When the organization wanted top management to maintain control over the ES, they maintained a hold of their sources of power although they prudently applied this power in an ad-hoc fashion when necessary during post-implementation. However, if the organization wanted other staff to play a more active role in managing the ES, then top management gradually loosened their reins of power and encouraged greater stakeholder empowerment.

As for knowledge, the focus initially was on consolidating the diverse knowledge from multiple sources. Subsequently, this pooled knowledge was tapped to ascertain different ways of alleviating OPS misfits. Finally, this combined knowledge was dispersed back to all pertinent stakeholders so that everyone involved with the ES had a shared understanding of what it could do and how it supported organizational and different stakeholders' needs.

Stakeholder identity also evolved during the OPS fit management process. Initially, many stakeholders focused on their personal identities but during the course of OPS fit management, the organization pushed for them to adopt a more relational and finally collective identity, so that they were more willing to contribute for the greater good of their department and organization.

Likewise, stakeholder inter-relationships were initially mainly dyadic in nature between top management and staff. However, during the course of OPS fit management, the organization pushed for stakeholders to communicate and become more interconnected with other stakeholders across the organization so that they shared a common understanding of the ES, and common organizational and their respective requirements, so that they were more able to contribute for the greater good of their department and organization.

Thus, by providing valuable insight into how these variables changed over time throughout the OPS fit management process, this study answered calls for more studies on how and why stakeholders and their relationships change over time (Friedman & Miles, 2002).

These findings also reinforced calls for more research on stakeholder management during ES projects by extending previous research to provide insight on exactly how stakeholders individually and collectively could affect and be affected (Freeman, 1984), by ES implementation. This set the stage for future research on

ES implementations to adopt this model, and its proposed leadership styles and contingency variables.

In summary, this study led to the development of a three-phased process model of the unique ES implementation challenge of managing OPS fit. This was in response to calls for more processual studies of ES projects that moved beyond traditional IS implementation metrics to explore unique challenges. This study also suggested that due to the involvement of multiple diverse stakeholders during ES implementation, companies should look beyond the traditional issue of feature-function fit and focus on the challenge of managing OPS fit. Moreover, unlike prior researchers that typically studied snapshots of feature-function fit, this study emphasized how managing OPS fit and its stakeholders was a dynamic challenge that traversed all phases of ES implementation. Moreover, while studies explored factors affecting fit, less attention was paid to alleviating these misfits. Thus, this study showed how the contingency theory of leadership could improve understanding of this process and how it can be managed by emphasizing the importance of stakeholder management and exploring different leadership styles to manage them and the contingency variables that moderate these styles.

7.1.2 Contingency Theory of Leadership

The contingency theory of leadership (Fiedler, 2005) was used as a lens to study the phenomena of managing OPS fit during ES implementation. Findings from the cross-case analysis underlined the suitability of this model for this study and

showed how it could be adapted to facilitate such a study. Leaders with a good match between their leadership style and situational characteristics were typically more effective in a given situation (Fiedler, 2005). This theory proposed two leadership styles (Utecht & Heier, 1976) and suggested that leaders should modify their situational control to suit their leadership style (Fiedler & Garcia, 1987).

This study though, suggested that this may not be feasible since situational control was contingent upon the motivation in managing OPS fit for each phase of ES implementation, while leaders may have difficulty altering inherent leadership styles. Instead, this study suggested having a team of leaders so different leaders could take precedence in different phases based on the style needed in that phase.

In terms of the styles in the original model, this study supported including the task oriented leadership style (Fiedler & Garcia, 1987), particularly during the initial phases, where the focus was on the task and assigning roles to stakeholders to emphasize group performance. The second style was relationship oriented (Fiedler & Garcia, 1987) but the cross-case analysis suggested that the definition of this style was too broad. Instead, two derivatives of this style were identified. The focus of the relationship-forming orientation was on establishing relationships between stakeholders. This was more pertinent during planning when relationships, especially across different stakeholders, were less established. Second was the relationship-leveraging orientation, where the focus was on building on relationships and maximizing their potential. This was more pertinent

during post-implementation when relationships were more established. Thus, this study proposed three leadership styles and showed how their relevance varied in the different phases of the process of managing OPS fit in ES implementation.

Given the different conditions in each phase of the OPS fit management process in ES implementation, a pertinent question was why certain individuals performed better in identical leadership situations (Fiedler, 2005). This theory suggested that situational control was a major determinant in moderating the correlation between leadership style and performance (Mitchell et al., 1970). However, findings from studies raised the possibility that the three contingency variables in the original model were insufficient to explain their data (Fiedler, 2005).

Thus, this study eschewed the original contingency variables and discussed contingency variables that were more relevant to the context of managing OPS fit in ES implementation. Subsequently, this study identified 17 ways in which these contingency variables could moderate leadership style. The first generic variable was leader-member relations (Utecht & Heier, 1976). Given the wide range of stakeholders involved in ES projects and the importance of all of them, this variable was expanded to consider inter-relationships between all the stakeholders. The second generic variable was task structure (Fiedler, 2005). This study though, did not find this variable particularly relevant. This could potentially be due to the structural rigidity which is the norm in Singaporean companies since there has been similar concerns about the effectiveness of this variable in such contexts

(Utecht & Heier, 1976). The third generic variable was power (Fiedler & Garcia, 1987). This study concurred with this variable but elaborated on how it emanated from top management or key appointment holders in early ES project stages but shifted towards end-users later in the project.

Since stakeholder management had such a prominent role in this process, two other stakeholder related variables were incorporated based on the within- and cross-case analysis. The first was knowledge, due to the need for a broad range of knowledge domains to manage OPS fit in ES projects (Wang et al., 2006) and the dispersion of this knowledge among multiple stakeholders (Jones et al., 2006). The second was identity, due to the aim of fostering a collective identity among stakeholders to increase commitment (Ashforth & Mael, 1989), and collaboration and willingness to contribute (McEvily et al., 2003) during this process.

In addition, this theory suggested that situational control moderated the link between leadership styles and performance (Fiedler & Garcia, 1987) but failed to explicitly elaborate on the reasons for this relationship or the links between the contingency variables that constitute situational control (Fiedler, 2005; Fiedler & Garcia, 1987). This study addressed this gap by showing that the contingency variables were inter-related and providing insight into how their links differed across different phases of this process.

In summary, this study considered three leadership styles to better clarify the styles employed to suit different contexts in different phases of the ES implementation. This served to expand the number of styles considered in the original contingency theory of leadership by suggesting that the original relationship style was too narrow a concept and should be split into two to more accurately reflect the different aspects of relationship management that leaders faced. This study also went beyond the original generic contingency variables of this theory to consider four variables – power, knowledge, identity and inter-relationship – that were more relevant to the context of managing OPS fit in ES projects. In doing so, this study broadened the leader-member and power variables to take into account other stakeholders, omitted the task structure variable due to a lack of support, and introduced two new variables – identity and knowledge management. Finally, this study responded to calls for greater elaboration on the links between the contingency variables by describing how these links dynamically varied across different phases of the ES implementation process.

7.2 Practical Implications

In addition to the theoretical implications, the findings of this study led to several practical implications. Firstly, the management of OPS fit during ES projects was shown to be an ongoing process that traversed all phases and was arguably a key driving force during the project (Finding 1). During planning, the main motivation was the ascertainment of OPS fit. Thus, practitioners may want to use this opportunity to identify possible areas of misfit between all three areas –

organization functions, package features and stakeholder needs – rather than focus only on the usual organization-package discrepancies. During development, the main motivation was the resolution of OPS fit. Thus, practitioners may not want to be constrained to merely changing organization functions or package features. Rather, practitioners may want to consider an amalgam of OPS fit solutions and changing stakeholder interests. During post-implementation, the main motivation was re-education about OPS fit. Practitioners may want to consider a mix of formal and informal channels to re-educate stakeholders about the ongoing changes made to fine-tune OPS fit, besides merely formal training sessions.

This study also found three leadership styles – task, relationship-forming and relationship-leveraging oriented – that were pertinent at different times of managing OPS fit during ES projects (Finding 2). Given the emphasis on task fulfilment to coordinate organization-wide efforts and needs, selecting a suitable package and making changes to enhance OPS fit, the ideal leadership style may be task-oriented. Several firms may however consider using the planning phase as an opportunity to begin fostering closer relationships between stakeholders so a relationship-forming leadership style may later become relevant. Then, once the system is rolled out, focus can shift to building on stakeholder inter-relationships and encouraging more proactive stakeholder involvement to fine-tune OPS fit so a relationship-leveraging oriented leadership style may be ideal. This means that practitioners must understand that different leadership styles are required for different activities and at different times during ES projects. Practitioners can thus

consider assembling a team of leaders with a mix of leadership styles and assign different leaders to oversee different phases or activities of the ES project.

This study further identified that the impact of leadership style on performance in each phase of managing OPS fit during ES implementation was moderated by a dynamic combination of four contingency variables (Finding 3). In each phase, there was a different focal variable so practitioners may want to focus on that focal variable in that phase first before addressing the other secondary variables.

One variable was stakeholder power so practitioners may wish to go beyond relying on top-down authoritative power to support the project and consider the power accrued by stakeholders in different phases of the project, especially since power was mainly pertinent only in the planning phase of ES implementation. Consequently, if practitioners want to maintain control over the ES, they should keep abreast of what the ES entails and remain well connected with other stakeholders so that they could step in to take charge on an ad-hoc basis as required. Alternatively, if practitioners want to reduce micro management of the ES, they could consider loosening their control over the ES and supporting greater stakeholder empowerment instead.

A second variable was knowledge since ES implementations require a wide mix of knowledge domains. Hence, practitioners may want to establish formal and informal channels of communication exchange. These channels need to support

knowledge gathering and utilizing by key decision-makers during early phases, and knowledge dissemination to all relevant stakeholders in later phases so that all the diverse stakeholders of the ES had a common appreciation of what the ES entailed and their own roles in supporting the system.

Another variable was identity and practitioners may wish to focus on fostering a collective identification in stakeholders so they are more inclined to proactively contribute towards improving OPS fit for the benefit of firstly, the organization as a whole and secondly, their respective departments. Practitioners though should be aware that stakeholder identification varies across different stakeholders as they have different priorities and rate of evolution towards a collective identity. Hence, practitioners need to be flexible in employing different strategies to foster this collective identification for different stakeholders.

The final variable was inter-relationships and practitioners may want to move beyond a hub-and-spoke model of dyadic relationships with top management, towards a stakeholder web of inter-relationships among all stakeholders to foster greater stakeholder interactions and communication. This entails not only providing more avenues to enhance stakeholder interaction but also instilling a greater desire and understanding of the importance of maintaining inter-stakeholder links across the organization with reference to using an ES.

Practitioners can also reflect on the dynamic links between these four contingency variables as they change during the ES implementation process, and keep in mind that each variable is affected by or can affect other variables so their strategies should be multi-tiered and not overly focused on only one variable.

The final finding in this study showed that stakeholder management was crucial throughout the process of managing OPS fit towards re-education in ES implementation but there were two possible paths that could be taken depending on the firm's desired outcome (Finding 4). Many practitioners overlooked this aspect of ES projects and relied heavily on stakeholders following what they were told to do by top management. Instead, as shown previously, the key contingency variables moderating leadership styles were all stakeholder-related.

Hence, it is timely for practitioners to shift their focus back to managing their multiple stakeholders during ES projects. However, practitioners may wish to keep in mind that the path they undertake to manage these stakeholders is dependent on the organizational environment they want in post-implementation, be it reliant on top management monitoring or stakeholder self-management. Then, practitioners need to alter their stakeholder management style accordingly during the project, especially after the planning phase, to foster this environment.

7.3 Limitations and Future Research

This study suffered from several limitations, which however, offers opportunities for future research. While this study provided support for the adaptation of two contingency theories from the original contingency theory of leadership, one variable that did not find support in this study was task structure (Fiedler & Garcia, 1987). Researchers questioned the effectiveness of this variable in formal organizations where structural rigidity is the norm (Utecht & Heier, 1976). Thus, a plausible explanation for the lack of support for task structure could be the rigid organizational environment of firms in Singapore, particularly a government agency like SPS and government-aided entity like RP. These organizations and their stakeholders typically ascribed to such rigidity in the face of a major project such as an ES project. Hence this lack of support may be unsurprising.

Having said that, this thesis does not claim that the three leadership styles and four contingency variables identified in this study are the only pertinent ones during management of OPS fit in ES implementation. Therefore, future research may find it fruitful to provide empirical affirmation of these components in this context. From there, future research could continue to study ES implementations and search for other leadership styles or contingency variables that could be pertinent during management of OPS fit in ES implementation.

There may be a perceived limitation in the research methodology employed. Both case studies were conducted after the system was rolled out and relied largely on

retrospective interviewee data, which has been critiqued due to interviewees' lack of recall (Glick et al., 1990). To increase data validity though, multiple informants (Miles & Huberman, 1994) were selected from a range of age groups, roles and seniority, and their input was triangulated with other interviewee and secondary data (Yin, 2003) to identify any respondents' bias, but none were identified.

In addition to the abovementioned, this study also offers several other areas for future research. This study showed how the unique challenge of managing OPS fit could be a crucial foundation for ES implementation. Future research can build on this to study each phase of this process in depth to identify the key activities related to this challenge in each phase, and explicitly correlate them with relevant stakeholder involvement and enactment of contingency variables.

This study also showed how the contingency theory of leadership is incomplete and needs to be adapted based on the context of study, such that relevant leadership styles and contingency variables may be identified. Future research can build on this to apply this theory to other areas of research and explore the unique adaptations of this theory in those contexts, and consolidate these findings to develop a more generalizable theory.

Finally, the contingency theory of leadership was effectively used as a lens to understand the unique phenomena of managing OPS fit during ES implementation. Future research can similarly consider other theoretical lens to provide a multi-

faceted study of this context, such as to focus on stakeholder management, knowledge management or stakeholder identification.

In conclusion, it is posited that this study provided insight into the challenge of managing OPS fit during ES implementation which may contribute towards a greater likelihood of ES project success. Such implementation success will benefit the firm by ensuring the ES closely fits their needs and will benefit stakeholders by fostering their closer affinity with and sense of ownership in the firm. Firms can therefore get better returns on these immensely popular (Gattiker & Goodhue, 2005) yet uniquely challenging (Akkermans & van Helden, 2002) packages. Concurrently, it is hoped that this study helped to bridge the gap in ES implementation research on the need to go beyond generic IS implementation metrics (Al-Mudimigh et al., 2001) and focus on unique issues plaguing these systems that are more complex than traditional IS (Ko et al., 2005), by providing insight into the unique process of managing of OPS fit during ES implementation.

8 References

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Appendix A: List of Acronyms

Acronym	Full Term
BPD	Blueprint Document
CCC	Centre for Culture and Communications
CED	Centre for Educational Development
CIE	Centre for Innovation and Enterprise
CMS	Customer Management System
CPD	Centre for Professional Development
CRM	Customer Relationship Management
CSM	Centre for Science and Mathematics
EBS	Enterprise Business System
EIS	External IT Staff
ERP	Enterprise Resource Planning
ES	Enterprise System
FD	Functional Design
LEO	Learning Environment Online
MD	Managing Director
OAA	Office of Academic Affairs
OIS	Office of Information Services
OPS	Organization-Package-Stakeholder
PBL	Problem Based Learning
PD	Project Director
PM	Project Manager
RP	Republic Polytechnic
SAS	School of Applied Science
SCM	Supply Chain Management
SEG	School of Engineering
SI	System Integration
SIR	System Investigation Report
SIT	School of Information & Communications Technology
SIT	System Integrated Testing
SPS	Singapore Power Services
SSS	Staff Suggestion Scheme
STA	School of Technology for the Arts
UAT	User Acceptance Testing

Appendix B: ES Implementation Success Stories

Organization	Success Story
Accessible Technologies Inc. (ATI)	ATI replaced their three separate non-interoperable systems and databases with an EnterpriseIQ ERP and CRM system in 2005 to increase manufacturing productivity, improve product quality, reduce call volume through better customer service, and better internal communication (IQMS, 2011b).
Flambeau EuroPlast	Flambeau replaced their separate MRP and accounting software with a single enterprise-wide EnterpriseIQ system in 2008 to achieve cost savings through inventory reduction and an empowered shop floor that benefits the entire business team (IQMS, 2011a)
Fujitsu Microelectronics	Fujitsu Microelectronics reduced their cycle time for filling orders from 18 days to one and a half days, and cut the time required to close its financial books from eight days to four days (Davenport, 1998)
IBM	IBM's Storage Systems division reduced the time required to reprice its products from five days to five minutes, time to ship a replacement part from twenty-two days to three days, and time to complete a credit card check from twenty minutes to three seconds (Davenport, 1998).
Microsoft	Microsoft spent 10 months and $25 million replacing 33 systems in 26 sites with SAP, saving an estimated $18 million annually (Adam & O'Doherty, 2000)
Mosanto	Mosanto managed to standardize 85% of the data used in their ES and went from using 24 coding schemes for suppliers to one (Davenport, 1998)
Owens Corning	Owens Corning adopted ES to replace 211 legacy systems, to track finished-goods inventory in their warehouse and distribution channel daily, reduce spare-parts inventory by 50%, and save about $65 million by the end of 1998 due to globally coordinated processes (Davenport, 1998)

Appendix C: ES Implementation Failure Stories

Organization	Failure Story
Allied Waste	Allied Waste ended their $130 million system partly because they considered it too expensive (Markus & Tanis, 2000)
Dow Chemical	Dow Chemical spent seven years and half a billion dollars implementing a mainframe-based ES before they had to start over to implement a client-server version (Davenport, 1998)
Ford Motor Company	Ford has a messy patchwork of purchasing systems that did a poor job and cost millions annually just to keep working so they began development in 2000 to replace all with a single new solution but cancelled the project six years later, over budget by $200 million (Pennington, 2011).
FoxMeyer	FoxMeyer went bankrupt in 1996 after 3 years of unsuccessfully implementing SAP, which culminated in FoxMeyer suing SAP's US subsidiary and Arthur Anderson for their role in the failure (Adam & O'Doherty, 2000; Markus & Tanis, 2000; Scott & Vessey, 2002)
Hershey's	Hershey's spent US$112 million implementing an SAP system but lost US$150 million in revenue due to logistics problems in their first year after go live (Seddon et al., 2010)
J Sainsbury	Sainsbury invested in a new SCM system to improve the timing of merchandise deliveries but in October 2005, with merchandise stuck in warehouses and market share slipping, they cancelled the project, wrote of $526 million and hired 3000 clerks to manually stock shelves (Pennington, 2011)
Sydney Water Corp.	Sydney Water Corp. attempted to introduce an automated customer information and billing system in 2002 but due to inadequate planning and specifications that led to numerous change requests and significant added costs and delays, they aborted the project midway after spending AU$61 million (Charette, 2005).

Appendix D: Qualitative vs. Quantitative Research

Basis of Comparison	Qualitative Research	Quantitative Research	References
Origin	Based on social sciences	Based on natural sciences	Myers, 1997
Type of research	Subjective	Objective	Lee, 1991; Lee, 1992
Focus of research	Description	Statistics	Lee, 1991; Lee, 1992, Neuman, 2003
Level of involvement of researchers	Involved insiders	Detached outsiders	Denzin & Lincoln, 2000; Lee, 1991; Lee, 1992, Neuman, 2003
Research design	Flexible	Linear	Neuman, 2003; Taylor & Bogdan, 1984
General approach used	Interpretive approach	Positivist approach	Neuman, 2003

Appendix E: Different Qualitative Research Strategies (Adapted from Yin, 2003)

Strategy	Form of research question	Requires control of behavioural events?	Focus on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much, why	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes
History	How, why, what	No	No
Case study	How, why, what	No	Yes

Appendix F: Comparison of Case Study Sites

	Republic Polytechnic (RP)	**Singapore Power Services (SPS)**
Industry	Education	Energy utility (Government-corporatized)
Organization Established	August 2002	October 1995 (Singapore Power (SP)) January 2003 (Singapore Power Services, a subsidiary of SP – previously known as Power Supply)
No. of Relevant Departments Using ES	Six internal schools/education centres	Four internal departments and nine external principals
Enterprise System	Learning Environment Online (LEO)	Enterprise Business System (EBS)
Type of ES	Learning management system	Billing system
Software Package	Wizlearn Academic Version 7	SAP Utilities Industry
External Implementation Partner	Wizlearn	Accenture
Project Champion	Office of Academic Affairs Director	Managing Director
Project Director	Academic staff	Deputy Managing Director
Project Top Management Team	Project Director	SPS Project Director, Accenture Project Director, SPS User Project Manager, SPS IS Project Manager
Project Team	IT staff seconded from Wizlearn	IT staff from Accenture, SPS internal IT staff, SPS users
Project Team Size	About 10	About 100
Project Duration (Project Planning to Roll-Out)	One year	Two and a half years
Post-Purchase Tailoring	Mainly by heavily modifying package	Mainly a mix of porting customized features from previous system and business process reengineering

Appendix G: Details of Interviews Conducted in Two Case Studies

Details	RP Case	SPS Case
Period of Data Collection	May 2005 – October 2005	January 2009 – February 2009
Period Studied	August 2002 – October 2005	June 2000 – February 2009
Total Number of Interviewees	25 (all one-on-one)	22 (13 sessions – mix of one-one-one and group)
Duration of Interviews	Half an hour to one hour forty minutes	Half an hour to two and a half hours
Setting	One-on-one	One-on-one and group
Interviewees	• Top management (including the Deputy Principal and six department Directors) • Internal IS staff • Users from four of the nine academic departments • External IS staff • See Appendix H	• Top management (including the Managing Director, Deputy Managing Director and five Process Owners) • Internal IS staff • Users from all four departments • External IS staff • See Appendix I
Tenure of Interviewees	2 months – 3 years	4 years – 29 years

Appendix H: Background Information on RP Interviewees

Department	Role	Years in RP	Interview Duration
Principal's Office	Top management	3 years	1hr 40min
Centre for Educational Development	Top management	3 years	1hr 20min
Centre for Science and Mathematics	Top management	2.5 years	1hr
Office of Academic Affairs	Top management	3 years	55min
Office of Information Services	Top management	3 years	1hr
School of Applied Science	Top management	3 years	1hr 30min
School of Information & Communications Technology	Top management	3 years	45min
Centre for Educational Development	Academic staff	3 years	50min
Centre for Educational Development	Academic Staff	2 months	1hr 10min
Centre for Educational Development	Academic Staff	2 years	1hr 15min
Centre for Educational Development	Academic Staff	1.5 years	1hr 5min
Centre for Educational Development	Academic Staff	2 years	30min
Centre for Educational Development	Academic Staff	3 months	35min
School of Applied Science	Academic Staff	6 months	50min
School of Applied Science	Academic Staff	1 year	40min
School of Applied Science	Academic Staff	1.5 years	55min
School of Information & Communications Technology	Academic Staff	6 months	1hr
School of Information & Communications Technology	Academic Staff	2.5 years	40min
School of Information & Communications Technology	Academic Staff	1 year	50min
School of Information & Communications Technology	Academic Staff	2 years	40min
Office of Academic Affairs	LEO manager	2.5 years	55min
Office of Information Services	Internal IS staff	2.5 years	1hr 10min
Office of Information Services	Internal IS staff	3 years	50min
Wizlearn (Vendor)	External IS staff	9 months	40min
Wizlearn (Vendor)	External IS staff	3 months	1hr 20min

Appendix I: Background Information on SPS Interviewees

Department	Role	Years in SPS	Interview Duration
SPS Managing Director / SPS Head of IS	Top management	5 years	32min
SPS Deputy Managing Director	Top management	6.5 years	
Management Office (Gatekeeper)	User	-	
Internal IS	Top management / IT PM	8 years	
SPS Managing Director / SPS Head of IS	Top management	5 years	1hr 56min
SPS Deputy Managing Director	Top management	6.5 years	2hr 28min
Steering Committee (Singapore Power)	Top management	1 year	1hr 31min
Billing	Process owner / User PM	11 years	1hr 57min
Customer Service (Integrated Call Centre)	Process owner	8 years	1hr 56min
Customer Service (Integrated Call Centre)	User	12 years	
Device Management (Installation)	Process owner	28 years	1hr 54min
Device Management (Installation)	Co-process owner / User	29 years	
Device Management (Meter Reading)	Process owner	27 years	1hr 49min
Device Management (Meter Reading)	Co-process owner / User	4 years	
Finance	Process owner	4.5 years	1hr 40min
Billing	Acting process owner	6 years	1hr 55min
Internal IS	Top management / IT PM	8 years	2hr 16min
Internal IS	Internal IS staff	10 years	2hr 29min
Internal IS	Internal IS staff	11 years	
Internal IS	Internal IS staff	10 years	
Accenture (Consultant)	External project manager	2.5 years	2hr 23min
Accenture (Consultant)	External IS staff	2.5 years	

Appendix J: Application of Principles for Conducting Interpretive Studies

Principle	Application in This Study
Hermeneutic circle: Analyze data by considering the interdependence between individual parts and the holistic phenomenon	It was ensured that the researcher and interviewees formed initial understandings of the ES and study, moved towards shared holistic meanings during data collection, and adjusted their initial mindsets. During data analysis, the researcher separately analyzed each piece of data then consolidated them into a holistic view of facilitating OPS fit during the ES project before re-analyzing the individual data for more insight.
Contextualization: Set the subject matter in its appropriate social and historical context to explain the emergence of the current situation	Before the studies, the researcher analyzed secondary documents to understand the organizational context. Then each study started with an interview of a key stakeholder to glean a broad overview of the organizational and ES project context. This enabled the researcher to fine-tune questions for the remaining interviews and better understand the data in its context.
Interaction between researchers and subjects: Consider how researchers and participants are both interpreters and analysts of facts	Interviewees were given the broad interview questions in advance and briefed on the study motivation so they could interpret their facts more closely in line with what the researcher sought. The researcher likewise studied background information on interviewees before meeting them to better elicit data on pertinent areas and interpret their analysis of the facts.
Abstraction and generalization: Explain and validate analysis of case study data by using theory as a sensitizing device	The researcher studied the process of ES implementation and analyzed this data in conjunction with relevant literature on stakeholder theory, identity and contingency theory of leadership to better understand how OPS fit is facilitated during an ES implementation.
Dialogical reasoning: Confront and address possible contradictions between researcher's preconceptions and data	The researcher began by focusing on stakeholder management during OPS fit facilitation in an ES project but the data gathered suggested gaps in the researcher's preconceptions so the contingency theory of leadership was incorporated to develop a more comprehensive framework.
Multiple interpretations: Examine potential contradictions in multiple viewpoints of events	Gather data from multiple sources to balance subjective interpretations of different interviewees against factory secondary data. A diverse population of interviewees was also approached to identify possible sources of discrepancies and conflicting interpretations.
Suspicion: Consider the social world behind the words of the actors for potential false preconceptions	The researcher sent copies of the case description to key top management staff to check for factual accuracy and ensure the veracity of the researcher's reading of the social world behind the data collected.