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IT Governance in IT Shared Services Environments

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Abstract

IT governance focuses on how leadership can be effective and efficient in guiding an organisation's use of technology to meet business needs. A collaborative business model of IT shared services provision is a complicated endeavour as it often involves multiple stakeholders having different objectives, resources, and capabilities. Over the past decade, numerous studies have shown that not all organisations achieve the full benefits they expect from shared services. A robust IT governance of shared services focuses not only internally, but also incorporates the viewpoints and guidance of its customers. Hence, the following research questions were explored. First, given a particular type of shared IT services delivery arrangement, what should be the IT governance structure (decision rights) adopted within an organisation? Second, are the decision rights and accountability allocated effectively? How does an organisation leverage IT governance practices to ensure desired business outcomes in a shared services environment? Accordingly, the goal of this research is to identify significant factors influencing the IT governance mechanisms.

Based on the resource-based theory and agency theory, seven hypotheses are derived. The hypotheses were empirically examined using data obtained via an online survey. A survey methodology was used to collect data from top management and senior business managers of varying industries and organisation sizes. Two hundred and five valid responses from both shared services clients and providers were obtained.

Contrary to expectations, the IT decision framework has a much-business centralised IT governance structure. The results indicate organisations govern IT differently in five decision areas depending on their shared services delivery arrangements. Organisations adopting limited shared services options centralise more of their IT decision rights. Organisations forming a joint service agreement with more business units utilise a federal approach. Those setting up a separate ‘special purpose vehicle’ employ a mixed IT governance model. Senior business leaders make the major IT decisions when external customer access is allowed. The findings also suggest that the business value generated from IT is characterised by an organisation’s ability to effectively align the IT decision rights and accountability structures. The formal and regular assessment of IT governance, however, has no significant association with the business value of IT. The use of monitoring mechanisms has positive impact on organisational performance, including independent review of shared IT operation, profession-wide oversight and joint working on shared IT products. The results of the study will be of interest to managers involved in IT shared services who wish to create IT governance mechanisms that support business goals, protect business investments in technology, and appropriately manage IT-related opportunities and risks.

Declaration by author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

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Keywords

IT shared services, IT governance, resource-based view, agency theory, survey instrument, content validity, quantitative approach

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This thesis is dedicated to the memory of Adrian Giles Evett (AGE), whose practical knowledge of IT governance was unexcelled.

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List of Abbreviations

ANOVA	Analysis of Variance
AVE	Average Variance Extracted
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFO	Chief Financial Officer
CIO	Chief Information Officer
COBIT	Control Objectives for Information and Related Technology
COO	Chief Operating Officer
CVR	Content Validity Ratio
ERP	Enterprise Resource Planning
IS	Information System
IT	Information Technology
ITIL	Information Technology Infrastructure Library
KMO	Kaiser-Meyer-Olkin
PLS	Partial Least Squares
RBV	Resource-based View
SLA	Service-Level Agreement
SSC	Shared Services Centre
SSDA	Shared Services Delivery Arrangement
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

The recent global economic downturn has left its mark on both private and public sectors (e.g., Makkonen, 2013). Corporate executives struggle with competitive pressures to be aggressive in the market and often lack the required capital to develop important administrative and support functions. Research evidence reveals that, as organisations emerge from the recession, there is a common need to deliver competitive advantage that has led to an increased interest in a shared services model (HfS Research, 2011). While the notion of shared services is still under debate, it is broadly defined as the concentration of organisational resources performing "like" activities, typically spread across the organisation, to service multiple internal partners with the common goal of delighting external customers and enhancing corporate value (Schulman et al., 1999). Therefore, IT shared services is a collaborative business model of services provision by more than one business unit or organisation in which service aims and objectives are shared. This definition excludes outsourcing arrangements, i.e., third party vendors contractually charged with the provision of an organisation's functions (Hirschheim et al., 2007). Lower costs, higher service levels, and greater responsiveness in delivering services to users are some positive outcomes of shared services applications. These outcomes are particularly relevant as internal services now need to be delivered with a service-oriented approach to all users within the organisation (Bergeron, 2003; Goold, et al., 2001). Organisations, however, are also looking to gain more value from their shared services operations (Ernst & Young, 2013).

The most popular support function targeted for shared services is IT services (Accenture, 2011a; ATKearney, 2006). The proliferation of Intranet and Web service technologies based on commonly accepted standards allows for the sharing of a wide variety of IT functionality with efficient and reliable coordination mechanisms (Varian, 2002; Wagenaar, 2006). As technology becomes more pervasive, new organisational arrangements for shared services have become feasible. For example, the public sector is planning to invest in cloud computing infrastructure and increase the use of shared services to deliver its new whole-of-government IT strategy (CIO, 2013). With the appropriate shared services foundation in place, organisations could see the ripple effects of related advantages. These advantages include a clear path to private and community clouds, which build on core shared services components, such as shared business applications and service delivery models (CISCO, 2012). Unfortunately, organisations have often adopted a trial-and-error approach to develop and deploy the concept of shared services (Deloitte, 2009). The IT project failures and cost blowouts among various governments have led to questioning of the viability of the shared services approach (Queensland Audit Office, 2010). According to a recent survey from Deloitte, however, 95% of respondents believe that shared services will continue to be an important

and value-adding part of their organisations (Deloitte, 2013). Indeed, successful management of IT shared services was listed as one of the seven 'habits' of effective Chief Information Officers (CIOs) (Andriole, 2007).

Some practitioners indicate IT governance is more crucial during an economic recession (Lebeaux, 2009). IT governance applies concepts borrowed from corporate governance to strategically drive and control IT, particularly in relation to two key-issues: the value IT delivers to an organisation and the control and mitigation of IT-related risks (Hardy, 2006; Peterson, 2003). Effective IT governance provides strategies that promote the effective management of IT resources so that these IT resources contribute to business value (Lainhart IV, 2001). The IT governance of shared services is a complicated endeavour as it often involves multiple stakeholders having different objectives, resources, and capabilities.

The management and delivery of IT services in organisations constitutes a core interest of research in the academic discipline of information systems (IS) (Boynton & Zmud, 1987). Several operating frameworks to aid organisations in managing the delivery of IT services have arisen in the IS literature (Bharadwaj et al., 1999; Ray et al., 2005; Sambamurthy et al., 2003). The shared services concept still presents significant challenges and opportunities for organisations to improve performance (Ernst & Young, 2013; Provan & Milward, 2001). However, there are few studies on IT shared services and fewer yet that describe IT governance in a shared services environment.

This chapter proceeds as follows. Section 1.1 identifies the problems and states the research questions. Section 1.2 outlines the research approach. Section 1.3 discusses the theoretical and practical contributions of the research. Section 1.4 presents the thesis roadmap.

1.1 Problem Definition and Objective

The adoption of shared services delivery arrangements results in higher levels of interdependence across organisational boundaries and the possible need for supra-organisational connections (Janssen et al., 2009). To adopt such arrangements requires a need to change the existing ownership structure and agency relationship (ALGIM, 2010; Tomkinson, 2007). Therefore, shared services may have an impact on the IT governance, e.g., a trilateral relation is created between executive boards, business unit managers and shared services managers. It may not only be that the business unit managers are accountable to the executive board for performance, but the executive board also has a responsibility towards business unit managers to perform agreed services in a timely manner, according to specifications and costs. Although service-level agreements (SLAs) are commonly employed in the shared services environment, there is still much concern over the effectiveness of accountability mechanisms (Purtell, 2005). Hence, these mutual dependencies need to be coordinated using shared IT governance.

Studies have shown that not all organisations achieve the full benefits they expect from shared services (Deloitte, 2007). Reported direct cost savings due to deploying IT shared services are still not very well known and differ between sources (Strikwerda, 2006). For example, in a survey of 210 senior managers, IBM found that the results of shared services have been 'mundane rather than magical' (IBM, 2005). Another study of 140 executives in North America and Europe found that actual benefits were less than the expected benefits in the majority of cases. Thirty-three percent of respondents reported no cost savings, and the average cost savings among the remainder was 14% (ATKearney, 2006). In Australia, the auditor-general has recently confirmed that shared services across government departments is far behind meeting its original savings target (The Age, 2013). In addition, business unit managers experience loss of control over their business system and some feel as if the corporate office is controlling them through the shared services providers. Complaints can also be heard regarding loss of market orientation, loss of customer responsiveness, lack of clear communication and decision-making. Given the long implementation times and obvious risks of achieving only mundane outcomes, senior executives seek advice on how to realise the full potential of shared services (Lacity & Fox, 2008).

Governance for IT shared services often refers to two perspectives. The first perspective is the manner in which the shared services' client is involved in the decision-making of the shared services' provider. The second perspective is the governance within the client organisation itself. Much of the literature on IT shared services suggests that the client should be actively involved in the governance of the provider organisation (Cecil, 2000; Strikwerda, 2006; Ulbrich, 2006). Such involvement is appropriate if the provider and the client are in the same organisation under the same management. However, a separate and distinct organisation established to provide IT shared services is usually governed by its own management and it may not provide for client participation in its internal governance.

From a strategic perspective, the role of governance is to ensure that the shared services operation remains aligned with the vision, mission, and guiding principles of the enterprise as a whole. From an operational perspective, the governance function establishes service expectations, and it monitors and improves service delivery (Accenture, 2007). The shared services operating model is unique and requires a robust governance approach that focuses not only internally, but also incorporates the viewpoints and guidance of its customers. When the governance structure (decision rights) framework is tightly constructed, it promotes accountability, stakeholder participation, and defined integration points for decision-making. Service delivery is paramount to the success of shared services and understanding customer requirements and monitoring the organisation's ability to ensure business outcomes is critical. To implement a new operating model requires changing behaviours in the organisation. Governance is one of the few key tools at the disposal of senior

management to facilitate the change (Schulman, et al., 1999; Weill and Ross, 2008) and governance represents the most important success factor for IT shared services delivery arrangements (Accenture, 2007; ATKearney, 2006).

Thus, two research questions arise:

1. *Given a particular type of IT shared services delivery arrangement, what should be the IT governance structure (decision rights) adopted within an organisation?*
2. *Are the decision rights and accountability allocated effectively? How does an organisation leverage IT governance practices to ensure desired business outcomes in a shared services environment?*

By examining aspects of the resource-based view and agency theory, this research develops and applies a conceptual framework which guides a comprehensive analysis of the relationships between IT governance and IT shared services delivery arrangements, as well as the factors determining the desired business outcomes from IT under such arrangements. The results of the study will be of interest to managers involved in IT shared services who wish to create IT governance mechanisms that support business goals, protect business investments in technology, and appropriately manage IT related opportunities and risks.

1.2 Research Approach

A set of hypotheses is proposed based on the research framework that integrates dimensions of IT governance structure and monitoring mechanisms applied to a shared services environment. Given the nature of the research objectives (i.e., to investigate *what* and *how* the defined variables from the research model should be related) and the adequate availability of prior evidence on which to formulate hypothesized relationships, a survey is the most appropriate research method for this study (Pinsonneault & Kraemer, 1993).

This study will utilise a 'key informants' methodology for data collection, a method that relies on a selected set of members to provide information about a social setting (Venkatraman, 1989). The 'key informants' methodology has been used to obtain quantifiable information on organisational structure, decision making distribution, within the group, and external relationships among groups that base their collaboration on the knowledge they share (Papoutsakis, 2008). Based on other IT studies, informants are not chosen at random; rather, they are chosen because they possess special qualifications such as status, experience, or specialised knowledge (e.g., Munoz-Cornejo, 2007; Smith et al., 2014). In survey research, targeted respondents assume the role of a key informant and they provide information on an aggregated unit of analysis - a shared services client organisation in this study - by reporting on organisational properties rather than personal attitudes and perception. A damaging confound in utilising a key informant strategy is a lack of

knowledge by the respondent. Therefore, within the context of this study, it is important to identify organisations that actively engage in IT shared services arrangements, and to identify respondents within those organisations who are involved with, and most knowledgeable (at an organisational level) about, the IT governance activities.

1.3 Thesis Contribution

This research will enrich and expand the research into IT governance by examining the complexity of IT governance arrangements and their impacts on the business value of IT shared services.

1.3.1 Theoretical Contributions

From a theoretical perspective, this research offers a conceptual framework to identify the factors influencing an organisation's choice of IT governance structure formations and monitoring mechanisms. This research provides a more integrated approach to IT shared services governance issues and it develops an inter-disciplinary perspective by building on agency theory while considering the rich insights offered by complementary theories, such as the resource-based view of the firm. This research investigates how the resource-based view would utilise IT resources and their integration with the concept of organisational capabilities to enable IT governance capability for the organisation. This conceptualisation views IT governance as a capability, that if effectively developed and implemented, may improve the business value generated from the shared IT sourcing. By using quantitative data collected from shared services organisations to test the research model, the study also contributes to the ongoing debate on the potential of IT governance in delivering business value. Based on the results achieved, implications are presented for IS research, along with some prospective directions for shared services clients as well as providers for designing their shared IT governance.

1.3.2 Practical Contributions

This research is expected to help shared services organisations in a number of ways of which four are identified here. First, it provides insights for executive management relative to establishing an IT governance structure to match their shared services delivery arrangements. Second, it helps organisations guide the design of their monitoring mechanisms to implement the shared IT operation. Third, it assists IT management with identifying action plans for aligning their decision making structure with their accountability structure. Fourth, in the current economic situation of tightening IT budgets, the findings of this study give practitioners a more informed idea about

shared services organisations' concerns for delivering the outcomes of IT shared services, allowing them to adjust their IT governance mechanisms appropriately.

1.4 Thesis Roadmap

To provide empirical evidence for the suggested relationships, this study uses a positivist research methodology that builds upon hypotheses, derived from theory and previous research. The core part of this study is, therefore, the conceptual foundation and empirical validation of IT governance in shared services.

Chapter 2 summarises the conceptual foundations of this study. First, the two key research objectives of this study, shared services and IT governance, are defined. Second, basic concepts from the resource-based view and agency theory are presented and a research framework of IT governance, to be analysed in this study, is developed. The chapter closes with the constructs definitions and measures.

Chapter 3 extends the theoretical basis from the resource-based view and agency theory approaches before integrating the theories during the development of empirically testable hypotheses from the research model developed in Chapter 2. The relationship between the shared services delivery arrangement and the IT governance structure for each IT decision domain is developed first, followed by the examination of the relationships between the IT governance structural gap, the monitoring mechanism, and their impacts on business value of IT.

Chapter 4 examines the research methodology adopted. The chapter starts with a brief review of the research design. The chapter describes the development of the survey instrument and pilot test, including their results and recommendations for the main study. This chapter also highlights any ethical considerations, the survey administration process, and the approach used to identify the organisations to contact in the course of the questionnaire distribution. The chapter discusses the data preparation and concludes with a summary of response rate.

Chapter 5 commences by justifying the chosen analytical methodology, the exact test and partial least square approaches, and describes their underlying statistical concepts. After describing the method of data generation with an online survey, the data sets are tested for representativeness, evaluated in terms of their data quality, and assessed for potential biases. In addition, the required significance levels for the confirmatory approach are determined. The empirical results are the main contents of this chapter. The measures are tested for reliability and validity, followed by formal hypotheses testing.

Finally, Chapter 6 discusses the empirical results and derives implications for researchers and managers. Potential limitations of this study are discussed and avenues for further research are detailed. The chapter closes with a summary of the overall study and its findings.

CHAPTER 2: THEORETICAL FOUNDATIONS AND RESEARCH MODEL

This chapter discusses the theoretical foundations upon which this research is built. Section 2.1 reviews literature on shared services in general and IT shared services specifically. Section 2.2 defines IT governance. Section 2.3 presents the conceptual framework for analysing the IT governance mechanisms for shared services. This section briefly synthesizes the extant literature relating to the resource-based view and agency theory. The research model is developed from these theoretical foundations in section 2.4. The chapter concludes with a summary in Section 2.5.

2.1 Shared Services and Definition

The current literature is comprised of a wide variety of definitions and characteristics of shared services. What is identical in most sources, however, is a shared delineation of the concept of simple consolidation or centralisation while distinguishing shared services from traditional outsourcing concepts (e.g., Bergeron, 2003; Grant et al., 2007; Sako, 2010; Schulman et al., 1999; Singh & Craike, 2008; Ulbrich, 2006).

2.1.1 Shared Services in General

According to Accenture (2005, p.3), the definition of shared services is 'the consolidation of support functions (such as human resources, finance, information technology, and procurement) from several departments into a standalone organisational entity whose only mission is to provide services as efficiently and effectively as possible.' Through transferring administrative and transaction-oriented tasks into a separate business unit, retained functions can take on a more strategic role and focus on more value-adding tasks (Quinn et al., 2000). Shared services allow organisations to reduce costs through process standardisation and economies of scale. Standardisation reduces process duplication and economies of scale are achieved through combining processes previously carried out independently (Davenport, 2005).

2.1.2 IT Shared Services

For the purpose of this study, IT shared services is broadly defined as '*a collaborative business model of IT shared services provision by more than one business unit or organisation in which service aims and objectives are shared.*' The definition implies the concept of shared services is more than centralisation of service within a single organisation. It also includes sharing with a separate and distinct organisation, but stresses there should be an agreement that emphasises 'shared' responsibility for service end-results. In addition, this definition implies that the shared

services provider is typically responsible for providing services to an agreed service level and reporting on service performance. The definition is independent of the shared services delivery arrangements adopted and IT governance arrangements used to control the service provision.

IT shared services arrangements could engage in transaction-based, expertise-based, and/or strategy-based activities (Aguirre et al., 1998). The primary focus of IT shared services has been the concentration of transaction-based services that are repetitive and similar for each business unit. Transaction-based services are routine, high volume tasks that are highly sensitive to scale, e.g., IT infrastructure support. Many knowledge-based activities (e.g., IT project management and IT planning) can be pooled together and, in a more enterprising and flexible way, made available to a wider range of internal and external stakeholders. Shared services transforms the business of IT by further integrating expertise-based and strategy-based services, e.g. multiple IT architectures and systems into a cohesive vision for IT to deliver maximum value to the organisation.

To implement a new IT shared services delivery arrangement requires changing behaviours in the enterprise as organisations gradually shift from being the service provider to being customer-driven and finally to being the business partner leveraging on the success achieved at each phase (Couto et al., 2002). Frequently referenced definitions exemplify how shared services addresses the problems of traditional modes of IT service delivery by breaking down the existing service provision functional silos (Ulbrich et al. 2010). Much of the existing IT literature on shared services has observed the intra-organisational shared services implementations (e.g., Goh et al., 2007; Lacity & Fox, 2008; Sia et al., 2010). The shared services model originally involved different departments within a large corporation, or businesses with the same parent 'owner', who set up a new business unit to take on all relevant IT services. An increasing interest and potential for service sharing suggests increasing value from achieving more savings and realising further improvements in operational efficiencies. As such, it is worthwhile to investigate the potential for similar organisations to share similar or common services. However, only limited relevant IT literature is dedicated to inter-organisational sharing IT services (e.g., Janssen & Joha, 2006).

Shared services centres (SSCs) are an increasingly important and often-utilised approach to organising IT services (Schulz et al., 2009). Several studies from both industry and academia have assessed the implementation of SSCs in large corporations (Accenture, 2005; ATKearney, 2006; Janssen & Joha, 2007a). Many definitions exist, that differ in important characteristics, of the SSC concept. However, most definitions explicitly emphasise the independent organisational form of an SSC as a unit clearly separate from other areas with its own responsibilities and its own management. Frequently, the term 'partly autonomous' is used to signal that the SSCs are managed like separate businesses but still highly dependent on the parent company (Bergeron, 2003). Thus, the SSC typically belongs 100% to the corporation which at the same time is its main client. This

setup results in a very specific governance model and restricts the entrepreneurial freedom of the SSC. For instance, many SSC-internal decisions have to be agreed by the corporate group.

2.2 IT Governance and Definition

The IT governance literature includes a range of definitions providing different perspectives on the concept. Stated differently, IT governance is a multidimensional phenomenon, encompassing the alignment of IT with business (Van Grembergen, 2000), the IT related decision-making framework (Broadbent, 2002), and the IT related structure within an organisation (Schwarz & Hirschheim, 2003). The available definitions differ considerably depending upon the researcher's intention and approach to the research topic. The definition of IT governance has even been used to reflect the dynamic nature of the organisational environment (Patel, 2002).

In broad terms, IT governance is the tension between the exercise of decision rights, as a subset of corporate governance, and the design and execution of structures and processes to implement organisational objectives (ITGI 2003, 2007b; Van Grembergen and De Haes 2008, 2009). IT consumes considerable resources within modern organisations that both creates and mitigates risks. Building IT governance requires outlay of both money and managerial time resources. While focused primarily on the design of decision rights, Weill and Ross (2004) note that 'top performing' enterprises more effectively bind IT and organisational processes, and generate significantly higher levels of return on their IT investments than do their competitors.

Until the mid-1990's, most information systems were targeted toward in-house use. IT governance, therefore, has often been applied from an internal perspective (Brown, 1999; Brown & Magill, 1994; Sambamurthy & Zmud, 1999). In multi-business organisations, IT governance helps create synergies obtainable through shared, yet not identical, IT infrastructures, IT strategy making processes, IT vendor management processes, and IT human resource management processes. The lack of commonalities and the uniqueness of each component make the governance of IT in this context extremely challenging.

The shared services delivery arrangements vary depending upon the degree to which the organisations are tightly linked. Shared services relationships, including inter-organisational relationships, also require the coordination of task and function interdependence. Such interdependence suggests that each participant could be independent of the others, or that each one could be dependent on the preceding one, depending on how the shared services relationships are set. It is important to note that there is a clear distinction between IT governance and IT management. IT management focuses on the effective and efficient internal supply of shared IT services and products and the management of shared IT operations. IT governance in turn is much broader and concentrates on performing and transforming IT to meet present and future demands of

the shared services customers and external customers (Van Grembergen & De Haes, 2009). This high-level focus of IT governance is confirmed in the IT definition of Information Technology Governance Institute, which states that 'IT governance is the responsibility of executives and the board of directors' (Information Technology Governance Institute, 2004).

Weill and Ross (2004) define IT governance as 'specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT.' Furthermore, IT governance institutionalises best practices for monitoring IT performance to ensure that the enterprise's shared IT capabilities support its business objectives (Information Technology Governance Institute, 2004). For the purpose of this study, Weill and Ross's definition of IT governance is adopted and expanded to emphasise the monitoring mechanisms. IT governance is therefore defined as '*the distribution of IT decision rights and accountabilities among enterprise stakeholders and the mechanisms for monitoring decisions regarding IT*.'

2.3 Theoretical Approaches to IT Governance

A framework is necessary for systematically analysing and understanding the IT governance of the operation of shared services. Such a framework should provide the theoretical lenses through which the data will be analysed. The sharing of services concerns the unbundling and re-concentration of resources to allow multiple users to obtain services from one supplier and to deal with changes in response to the external environment, such as legal, economic and technological changes. IT governance mechanisms may be limited by, and dependent on, the heterogeneous organisational resources participating in the shared services network (Janssen & Joha, 2007a).

In this study, the resource-based view and agency theory are used to analyse and propose a structural mechanism for allocating IT decision rights and a process mechanism for monitoring IT governance capability. The resource centric approach views organisations as a bundle of resources (Barney, 1991). The resource-based view assumes that organisations possess resources (including IT) that differentiate them from their competitors (Barney, 1991). Thus, effective leveraging of IT resources is contingent upon how an organisation synchronizes its IT capabilities with other organisational capabilities (Prasad et al., 2010). The resource-based view provides suggestions on the synergy of these capabilities resulting in the creation of higher-level capability which is distinct to a shared services organisation, i.e., an effective IT governance structure. The theory is also recognised as an appropriate theoretical lens to examine IT business value (Patas et al., 2012).

Agency theory is concerned with the 'ubiquitous agency relationship' in which one party (i.e., the principal) assigns tasks to another party (i.e., the agent) (Eisenhardt, 1989). The agency problem arises due to a conflict of interest between the principal (i.e., shared services client) and the agent (i.e., shared services provider) in terms of work that has been delegated to the agent by the

principal. Practically speaking, agency theory is useful in evaluating control through which principals and agents can communicate economically. The traditional economic view of information asymmetry assumes one party in a transaction has information that the other party does not have. Such information affects the outcome of the transaction or induces behaviours that benefit the party possessing the private information. This asymmetry leads to moral hazard and adverse selection (Eisenhardt, 1989). Thus, the IT governance problem can also be viewed as an information asymmetry problem and governance practice can be viewed as the mitigation of such asymmetry. The agency theory provides the philosophical arguments on the need for an effective IT governance structure and monitoring mechanism. Before describing the proposed research model, the basic concepts of the resource-based view and agency theory are introduced in the following sections as they provide different perspectives on IT governance.

2.3.1 Resource-based View

The resource-based view (RBV) has emerged as an important explanation for persistent organisation-level performance differences (Leiblein, 2003). A seminal contribution to resource-based theory is provided by Wernerfelt (1984), who proposes the notion of resource position barriers, i.e., barriers to imitation, and links resource attributes to profitability. Subsequent research examined how performance differences across organisations can be attributed to the variance in organisations' strategic resources and capabilities (Amit & Schoemaker, 1993; Dierickx & Cool, 1989; Garud & Kumaraswamy, 2005; Peteraf, 1993), including the analysis of resources in the context of interconnected organisations (Dovev, 2006). This perspective can be applied to a shared services environment, as it draws attention to managing IT resources efficiently and effectively, and providing the core business with high levels of IT services (Ray et al., 2005).

First, the resource-based view of the firm argues that differential firm performance is fundamentally due to firm heterogeneity rather than industry structure (Barney, 1991; Wernerfelt, 1984). Firms that are able to accumulate resources and capabilities that are rare, valuable, non-substitutable, and difficult to imitate will achieve a competitive advantage over competing firms (Barney, 1991). Thus, the extant theory views the firm as the primary unit of analysis, and the search for competitive advantage has focused on those resources that are housed within the firm. This study, however, takes a broader view of resource-based theory. Each shared services delivery arrangement represents a different sourcing strategy and it has a collection of unique resources and capabilities that are used and shared by all the stakeholders. Therefore, a firm's critical resources and capabilities may extend beyond the organisation boundaries encompassing inter-firm routines and processes (Dyer & Singh, 1998). Designing an effective IT governance structural capability is, thus, dependent on the resource characteristics of participating business units or organisations. The

resource-based view draws attention to identify an organisation's unique IT governance resources and then help develop an effective IT governance structure in a unique way.

Second, while acknowledging that the direct effect of IT rarely exists, more resource-based inquiry has shown that IT may still have an indirect effect on a firm's competitive position or performance (Zhang, 2007). That is, despite lacking the characteristics required for sustainable competitive advantage, IT may exert positive influence on firm performance through their relationships with other organisational resources. Following the logic of resource complementarity (Teece, 1988), IT and strategy researchers have argued that firms whose IT are complemented by other firm-specific and hard-to-copy organisational resources are in a better position to defend their IT-derived competitive advantage than those that lack such resources (Bharadwaj, 2000; Byrd, 2001). According to this line of reasoning, though the necessary software and hardware used by a firm's IT can be easily imitated, it is more difficult for its competitors to copy the unique and intangible resources the firm uses in governing its IT. Moreover, blending IT with other organisational resources in devising decision making capability may create a complex set of complementary resources that are not easily matched by competitors, thus further sustaining IT-based advantage (Bharadwaj, 2000).

While resource-based view provides useful insights into the allocation of decision rights, it also suggests effective IT governance process mechanism, as an internal critical capability, can be a source of sustainable competitive advantage. In addition, appropriate IT governance structure in a shared services delivery arrangement can yield business value by ensuring shared IT is aligned to business strategy and objectives (Weill, 2004).

2.3.2 Agency Theory

The agency theory framework relates to the need for governance of an organisational resource (Mulili & Wong, 2011). This theory assumes the existence of an agency relationship in an organisation which results in agency costs. Agency costs refer to a decrease in shareholders wealth because of management's opportunist behaviour. Internal governance structures such as an IT governance structure can effectively reduce the instances of such costs, hence increasing the business value of IT (Donald & Davish, 1991).

Concerned with exchanges in which one party (principal) delegates work to another (agent), agency theory endeavours to surface contractual problems arising from the assumption that the agents will behave opportunistically if their interests are not aligned with those of the principals (Jensen & Meckling, 1976). Agency theory is applicable when describing client-provider relationships in IT shared services arrangements. The cooperating parties are engaged in an agency relationship defined as a contract (e.g., service agreement) under which one or more persons (the

principal(s)) engage another person (agent) to perform some service on their behalf, which involves delegating some decision-making authority to the agent (Jensen & Meckling, 1979). Typically, the shared services client organisation or business unit (principal) transfers property/decision rights to the shared services provider organisation or business unit (agent). In the context of IT, the assets (or resources) transferred might be infrastructure, systems and documentation, and/or employees. This study suggests the shared services relationships pose different risks and challenges to the client organisation, leading to different decision-making and controlling issues.

Several primary agency problems arise in a shared services environment. First, the principal (shared services client) and agent (shared services provider) may have conflicting goals. The definition of the goals in shared services can be a controversial issue because no one has absolute authority within IT. The various stakeholders hold different, sometimes opposing views on IT goals and priorities. Even the sharing of some goals, however, does not necessarily mean that people agree either on which goals should be optimised, or on how to optimise them. The shared services providers, for example, want to maximize their own wealth, power and prestige while safeguarding their reputation. The owners of the client organisations want to maximize the value of their assets by pressuring the service providers to become more accountable in their use of IT resources and by expecting them to do more at a lower cost. Meanwhile, the users demand more IT sophisticated and responsive services to boost their own business performance. These interests often collide, as the shared services providers can take actions that increase their power, influence or prestige without increasing the value of the resources and the quality of services.

Second, it is difficult or expensive for the principal (shared services client) to measure what the agent (shared services provider) is actually doing. According to agency theory, contracts are mechanisms for resolving, by *ex ante* stipulation, problems that arise from the imperfect alignment of interests (Jensen & Meckling, 1976). In a shared services environment, these contracts may be implicit, (based on unspoken mutual expectations, cultural norms, organisational culture) or explicit (based upon written representations, such as service-level agreements (SLAs)). However, these contracts are generally not legally binding (Knapp, 2013). The client organisation may deal with unclear, multi-interpretable or incomplete definitions about the scope of the services, the responsibilities of the business and shared services provider, and other important aspects (Janssen & Joha, 2004). Many SLAs are also not monitored regularly because the process of collecting data on SLA outcomes can be labourious and time-consuming (Huiji et al., 2009).

Third, the principal (shared services client) and the agent (shared services provider) may adopt different actions because of different attitudes toward risk. This situation may be related or unrelated to their respective goals (Jensen & Meckling, 1976). For example, the shared services

providers improperly use or adopt emerging IT technologies without considering their risks and maximising the benefits of new IT investment.

Finally, a substantial level of information asymmetry may be expected within firms (Ni & Khazanchi, 2009; Sharma, 1997). For example, the IT manager in most organisations is a specialist and not a business manager. Similarly, the business manager is generally not an IT specialist and usually possesses minimal IT knowledge that is general in nature and may not be specific. Such information asymmetry also exists between shared services provider and shared services client in the context of IT governance. For example, IT knows the new technology developments and business may not foresee the benefits (i.e., IT specific knowledge). On the contrary, IT may not know the business issues sufficiently to leverage new technology (i.e., business specific knowledge). Jensen & Meckling (1998) suggest that getting specific knowledge used in decision-making is costly, therefore, requires decentralising many decision rights in firms.

While agency theory provides useful insights into the allocation of decision rights, it also provides a basis for devising monitoring mechanisms that minimise inefficiencies in the contractual structure of the firm that arise from imperfect alignment of interests between principals and agents.

2.3.3 An Overarching Theory

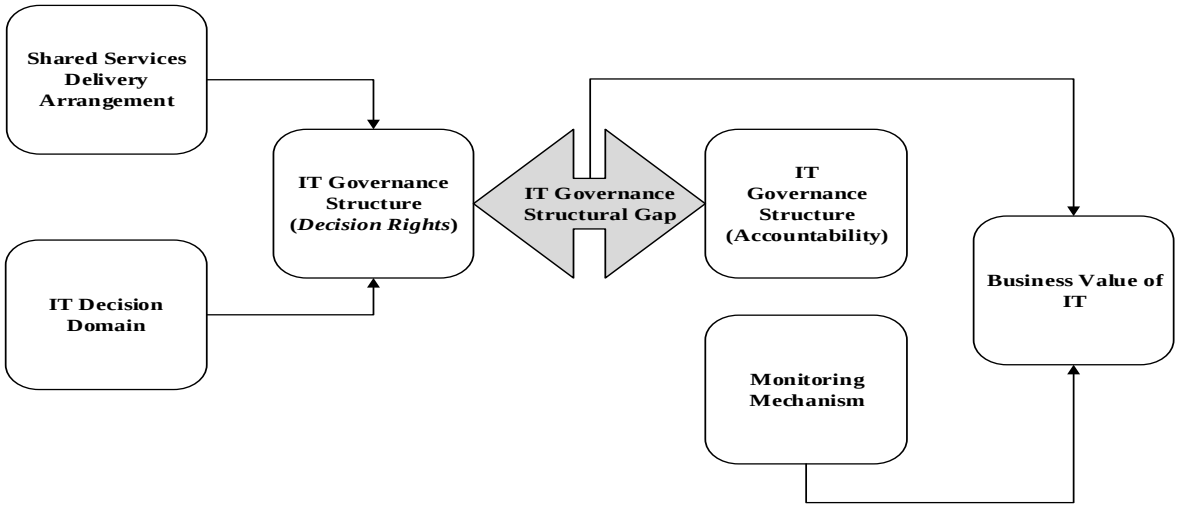
By integrating resource-based view and agency theory, this study suggests three principles for the client organisation to develop the IT governance capabilities:

1. Align resource characteristics with the decision rights to exercise control over a particular IT asset, i.e., specify clearly relevant IT decision domains for the shared services client and the shared services provider (Barney, 1991; Wade & Hulland, 2004) – Resource-based view.
2. Align decision rights with specific knowledge useful to competently exercise those rights (because general knowledge is easily transferable, it is not necessarily required that decision rights and general knowledge be co-located) (Fama & Jensen, 1983). This principle suggests that decision rights may be allocated to shared services providers to the levels at which managers have the specific knowledge to competently use those rights – Agency theory.
3. Design monitoring mechanisms to minimise agency risks and ensure IT performance (Eisenhardt, 1985) – Agency theory.

2.4 The Research Model

Implementing an effective IT governance framework facilitates the achievement of business value through IT (Agarwal & Sambamurthy, 2002). IT shared services operating models may be subject to change for various reasons, e.g., changing regulations, entering into new IT activities, and inter-partner learning. The choice of shared services delivery arrangement is of course relevant for the overall business value created from IT. However, for exploring the impact on IT governance, separate sourcing strategies can be seen (and assumed) as a given choice made by the organisation prior to devising appropriate IT governance mechanisms. Organisations recognise that 'getting IT right' will not be about technology, but about (shared) IT governance (Peterson, 2004). As shown in figure 2.1, this study proposes an integrated view of IT governance design to address both structural and monitoring capabilities, and their influences on business value of IT. The key elements of the research model are explored in more detail in the following sub-sections.

Figure 2.1: Research Model



Confronted with multiple business value drivers, IT governance mechanisms can occur at two levels. At the higher level (left hand side of figure 2.1), organisations must design an IT governance structure as a formal allocation of IT decision-making authority for connecting and enabling horizontal contacts between business and IT management functions (Brown, 1999; Peterson et al., 2000). IT governance in a shared services environment faces dual demands, namely, flexibility in responding to new business requirements and standardisation of IT service delivery (Peterson, 2003). Business and IT executives have to recognise that they need to meet the demands of customised, high-quality IT products and services. On the other hand, they need to standardise and achieve economies of scale to meet shared services objectives. The degree to which organisations can achieve these competing demands is a measure of an organisation's strategic flexibility, i.e.,

developing differentiated structural IT governance capabilities to proactively respond in an integrated manner to unanticipated changes (Agarwal & Sambamurthy, 2002; Hitt et al., 1998; Peterson et al., 2000).

Different *shared services delivery arrangements* have different targeted levels of business process integration and standardisation for delivering IT services to customers (Tomkinson, 2007). Business strategies encompass a broad range of key managerial decision areas – *IT decision domains* that offer direction for developing and leveraging IT capabilities (Weill & Ross, 2004). A key aspect of IT governance concerns who decides the direction of IT. Much of the discourse on IT governance has been on the exercise of decision-making rights and the forms of IT organisational structure (Brown & Grant, 2005; Weill & Ross, 2004). Given different strategies and organisation forms, different shared services organisations will encourage different behaviours. Accordingly, the *IT governance structure (decision rights)* varies from more centralised to more decentralised approaches sometimes using a hybrid of both depending on their combinations of shared services delivery arrangements and IT decision domains.

With decision rights comes accountability, which is a multi-faceted task involving the board, business and IT management. Ultimately, the board is responsible for all governance, but the board will expect or delegate an individual (e.g., the CEO or CIO) or group to be accountable for IT governance design, implementation, and performance, i.e., *IT governance structure (accountability)* (Weill & Ross, 2004). A variety of structural forms for accountability and systems of performance measurement have been proposed to ensure good organisational practices, e.g., COBIT and IT governance maturity assessment (Van Grembergen, 2004; Van Grembergen & De Haes, 2008). In the middle of figure 2.1, the two axes *IT governance structural gap* represent a continuous loop of identifying the difference between IT governance structure (decision rights) and IT structure (accountability), and assessing the results of the adopted IT governance mechanisms.

The ultimate goal of IT governance is to achieve strategic alignment between the business and IT to ensure that IT investments lead to business value (Van Grembergen et al., 2004). Organisations that lack effective governance suffer from low performance, heightened risk exposure, and resource allocation that may appear inappropriate, arbitrary, or political (Van Grembergen & De Haes, 2008; Weill, 2004). Weill and Ross (2004) argue that effective IT governance is the single most important predictor of the business value that organisations can generate from IT. Other researchers have made similar claims about the importance of IT governance. For example, IT governance allows an enterprise to more effectively concentrate on major business issues and facilitates guaranteeing security, integrity and reliability of organisation's strategic information (Lainhart IV, 2001). Clarity of accountability and responsibility help effective IT governance lead, in turn, to more business value returned from IT investments (Haghjoo, 2012).

Thus, to achieve *business value of IT* from sharing IT services, an organisation must assess and minimise the *IT governance structural gap* between desirable and actual behaviours (Clementi & Carvalho, 2009).

At the lower level (right hand side of figure 2.1), organisations must develop a repertoire of mechanisms to monitor IT decision-making. The IT governance model challenges managers in a client organisation or business units to surrender control over certain business-specific IT domains for the well-being of the enterprise or shared services partners and to develop business-to-IT and business-to-business shared services partnerships (Van Grembergen, 2004). In particular, the challenge is to control IT decision-making, yet empower shared services providers to take responsibility for IT decisions (e.g., Hodge, 2012). Many organisations still struggle with this task, especially considering their 'cultural' IT governance legacy with business resistance to change and relinquishment of IT control (Alter, 2001; Scheier, 2001). To achieve *business value of IT*, an organisation must articulate and implement appropriate *monitoring mechanisms* to ensure shared services management's action is aligned with the best interests of the client organisation in terms of shared IT strategy.

2.4.1 The Construct Definitions

The resource-based view and agency theory provide a useful conceptual framework for understanding the IT governance structure and the factors that affect their ability to successfully implement IT shared services. The construct definitions and key measures devised from the research model in figure 2.1 are discussed in the following subsections.

2.4.1.1 Shared Services Delivery Arrangement

Moving to IT shared services means a fundamental change to an organisation's service delivery model. A precise typology of shared services delivery arrangements has been proposed by (Tomkinson, 2007, p. 30), and it contains four shared services models. First, the '*intra-service*' model includes limited shared services options, such as centralised procurement and purchasing services. Second, the '*service*' model embodies a degree of formality of sharing a complete service but the organisation is not changed to meet the challenge of the sharing. Third, the '*corporate*' model involves two or more business units forming a joint arrangement to deliver a specific service or services at a mutually agreed standard in which both the costs and benefits are borne by all participating business units on a negotiated basis (a "user pays" model). Fourth, the '*supra-corporate*' model enables two or more participating organisations to set up a separate special purpose vehicle (e.g., joint venture) to deliver a specified service or services on behalf of

participating organisations. A fifth delivery vehicle called '*iso-corporate*' can be added. It is an extension of the supra-corporate model. The provider organisation would control all the assets and the means of delivery. The introduction of a third-party involvement is useful particularly to leverage existing investment (Dibbern et al., 2004).

Table 2.1: Shared Services Delivery Arrangement (SSDA)

Characteristic	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
Definition	Collaboration on specific and/or specialist services. e.g., purchasing IT equipment; partnership for delivery a project; or sharing an integrated software package.	One business unit allows another to provide the service with a transfer of control and responsibility, e.g., all the budget belongs to the 'shared' service business unit.	Two or more business units or organisations form a joint arrangement to 'share' a specific service or services at a mutually agreed standard in which both the costs and benefits are borne by all participating organisations on a negotiated basis, e.g., setting up a new management group.	Two or more participating organisations set up a separate special purpose vehicle to deliver a specified service or services on behalf of participating organisations, e.g., joint venture.	An extension of the 'supra-corporate' model. The delivery organisation is allowed to provide services to external customers, e.g., shared services centre.
Degree of formality of service arrangement	Informal	Informal	Formal	Formal	Formal
Type of agreement	None	None	Service- level agreement	Service-level agreement/ Contract	Service-level agreement/ Contract
Legal Basis	Intra-organisation business unit	Intra-organisation business unit	Intra or Inter-organisation business unit – flexible depending on customer needs	Independent subsidiary – incorporated independent of the parent firm, e.g., joint venture, companies limited by shares	Independent subsidiary – incorporated independent of the parent firm, e.g., joint venture, companies limited by shares
Risk transference	None	None/Limited	Limited/Moderate	Substantial	Substantial
Management – External market	No access	No access	Very limited	Limited access	Free access

Source: Modified from Tomkinson (2007). Detailed characteristics are shown in Appendix B.

2.4.1.2 IT Decision Domain

Weill and Ross (2004) propose that organisations have five major IT decisions to make. To facilitate the effective and efficient management of IT shared services, the five key IT decision domains can be organised within the IT resources framework proposed by Wade and Hulland (2004). First, '*IT principles*' decisions dictate the role of IT in the enterprise (Broadbent & Weill, 1997; Davenport et al., 1989). Second, '*IT investment*' decisions concern how much and where to invest in IT, including project approvals and justification techniques (Devaraj & Kohli, 2002; Ross & Beath, 2002). Third, '*business application needs*' decisions determine the appropriate applications to be implemented for the organisation (Earl, 1993). Fourth, '*IT architecture*' decisions focus on technical IT implementation choices and directions, including standardisation to integrate

technological alternatives to satisfy business needs (Keen, 1995; Ross, 2003). Fifth, '*IT infrastructure*' decisions concern the platform delivery of IT services, including network, sharing data, and common applications (Keen, 1991; Weill et al., 2002).

2.4.1.3 IT Governance Structure

IT governance structure involves the existence of responsible functions for making IT decisions (Van Grembergen et al., 2004). Weill and Ross (2004) propose six mutually exclusive governance archetypes (i.e., committee structures) for making decisions. First, a '*business monarchy*' includes a group of business executives (i.e. CEO, CIO, COO, et al) and excludes IT executives (i.e. shared services provider) who act independently. Second, '*IT monarchy*' includes IT executives (i.e. shared services provider) who act as individuals or a group with equivalent officers participating in the decision-making process. Third, '*feudal*' includes business unit leaders, key process owners or their delegates. Fourth, '*federal*' includes business executives (i.e. CEO, CIO, COO, et al) and at least one other business group (i.e. business unit leaders) with the IT executives (i.e. shared services provider) being an additional participant. Fifth, '*IT duopoly*' includes IT executives (i.e. shared services provider) and one other group (i.e. business executives or business unit leaders) or a joint decision by two organisations in the fields of IT and business. Sixth, '*anarchy*' includes individual users with no designation of decision-making authority. Most organisations use a variety of decision archetypes across the five decision domains. The *decision rights* (who makes business-IT related decisions) and *accountability* (who is accountable for in each decision area) structures are separately identified and assessed in this study.

2.4.1.4 IT Governance Structural Gap

The presence of '*structural gap*' refers to the identified difference between *decision rights* and *accountability*. *Decision rights* are defined as the extent to which groups make or have final 'say so' over decisions while *accountability* is defined as the extent to which groups are held responsible for the outcome of decisions (Grover et al., 2007). Assessing and diagnosing IT governance can help close the structural gap. The '*gap assessment*' includes mapping the current governance structure onto the anticipated governance structure, auditing IT governance metrics and accountabilities, and evaluating IT governance awareness and engagement on a regular basis (Clementi & Carvalho, 2009).

2.4.1.5 Monitoring Mechanism

Control by knowledgeable peers or customers is more robust than formal control mechanisms (Sitkin et al., 2010). Three monitoring mechanisms are considered to align the interests of agent (shared services provider) with principal (shared services client). First, '*independent review*' is the practice of having competent, objective reviewers evaluate the IT shared services policy and monitor the service agreement. The existence of independent professionals, not permanently and directly employed by the service providers themselves, has often been vital for these efforts (Pawlowski & Robey, 2004; Pollitt, 1986). Opportunistic inclinations of unscrupulous agents are often held in check by the standards for IT professional practice (Sharma, 1997). Second, '*profession-wide oversight*' involves the systematic application of IT rules, standards, or principles developed from research and the actual practices of and incidents experienced by major organisations (Kouzmin et al., 1999; Kumbakara, 2008). Third, '*joint working*' requires close consultation between the stakeholders (i.e., top management, business unit, shared services partner, and shared services provider) and co-ordinates the different but complementary interests and/or contributions. Joint working is therefore defined as the joint effort by which the service provider and client produce the service. In this joint effort, the quality of the final product largely depends on the active involvement of the clients in the joint production of service product. To organise a solution that fits the client's situation, the provider must offer specific knowledge that fits the client specific needs, and combine it successfully with the client's knowledge base (Hertog, 2002; Lee & Kim, 1999).

2.4.1.6 Business Value of IT

Numerous research has shown links between IT governance and business value (e.g., Haghjoo, 2012; Weill, 2004). Business value of IT has been commonly used to refer to the organisational-performance impacts of IT shared services. This study defines '*business value of IT*' as the degree to which predefined IT shared services objectives are realised in terms of *strategic, economic, technological, social benefits of IT shared services* (Devaraj & Kohli, 2002). Typical examples of shared services benefits include cost savings and sustainable efficiencies, improved service quality, and greater service responsiveness (Bergeron, 2003).

2.5 Chapter Summary

In summary, considerable research has been performed recently to understand shared services. This research has defined IT shared services and illuminated the conceptual foundation that help explain how a shared services organisation devises IT governance structure and implement

monitoring mechanisms. Despite the fundamental importance of the research framework, the confirmatory approach of this study requires a theoretical foundation to derive testable propositions. These propositions using the research method will be discussed in Chapter 3.

CHAPTER 3: HYPOTHESIS DEVELOPMENT

This chapter extends the theoretical basis from the resource-based view and agency theory approaches. These theories are integrated to provide a number of empirically testable hypotheses derived from the research model (Figure 2.1) presented in Chapter 2. Section 3.1 provides an overview of the research model. Section 3.2 develops the main theoretical predictions and the hypotheses for the anticipated IT governance structure. Section 3.3 develops the hypotheses for IT governance structural gap. Section 3.4 develops the hypotheses for monitoring mechanism. Section 3.5 concludes the chapter.

3.1 The Detailed Research Model

Based on the research model discussed in the previous chapter (Figure 2.1), the following sections develop the hypotheses that are tested empirically in this research. The detailed research model and hypotheses are shown in Figure 3.1. With regard to *IT governance structure (decision rights)*[1], the design structure is influenced by the combination of the *shared services delivery arrangement*[2] and the *IT decision domain*[3] (left hand side of figure 3.1). Hypotheses H1 to H5 describe these relationships. The *IT governance structural gap*[4], conceptualized as the difference between *IT governance structure (decision rights)* and *IT governance structure (accountability),*

[1] IT Governance Structure:
- Business monarchy – a group of business executives (i.e. CEO, CIO, COO, et al) and excludes IT executives (i.e. shared services provider) who act independently.
- IT monarchy – IT executives (i.e. shared services provider) who act as individuals or a group with equivalent officers.
- Feudal – business unit leaders, key process owners or their delegates.
- Federal – business executives (i.e. CEO, CIO, COO, et al) and at least one other business group (i.e. business unit leaders) with the IT executives (i.e. shared services provider) being an additional participant.
- IT duopoly – IT executives (i.e. shared services provider) and one other group (i.e. business executives or business unit leaders) or a joint decision by two organisations in the fields of IT and business.
- Anarchy – each individual user.

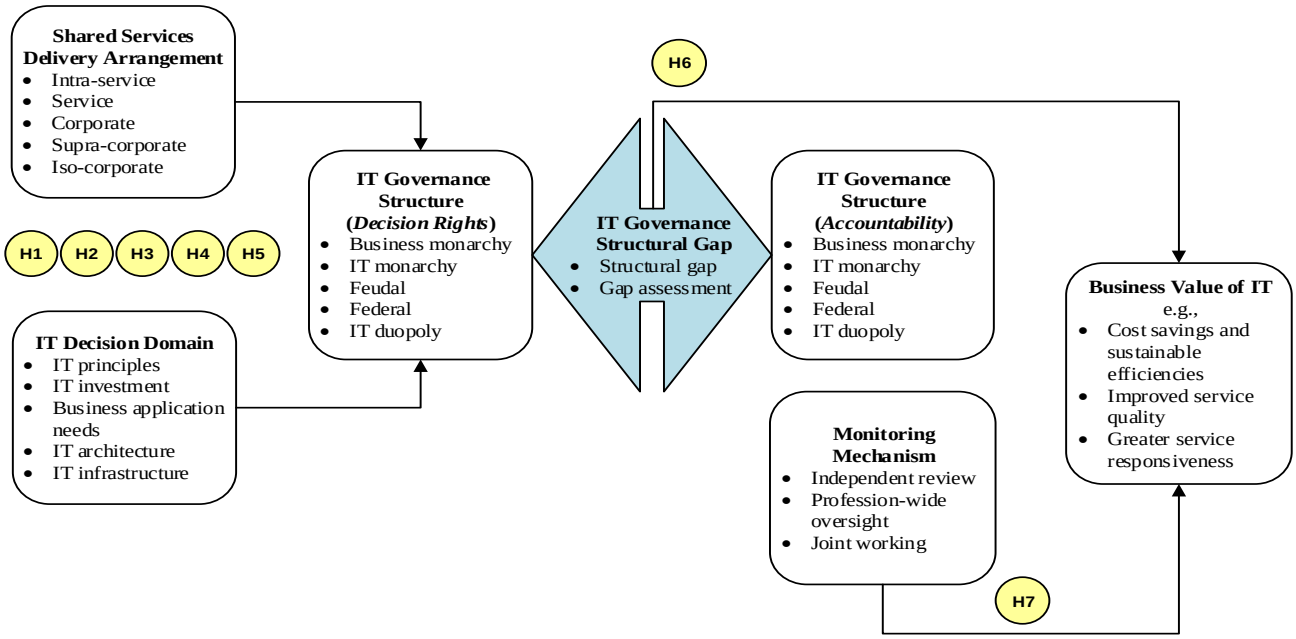
[2] Shared Services Delivery Arrangement:
- Intra-service – collaboration on specific and or specialist services where only part of a service is shared.
- Service – where one sharer transfers responsibility to another, so that the entire service can be shared, but the organisation is not itself changed to adapt to the sharing.
- Corporate – where the sharing involves a formal agreement and change to the shared services department or organisation.
- Supra-corporate – where a new or separate organisation is created to deliver or support the shared service.
- Iso-corporate – an extension of the supra-corporate model. The delivery organisation is allowed to provide services to external customers.

[3] IT Decision Domain:
- IT principles – decisions dictate the role of IT in the enterprise.
- IT investment – decisions concern how much and where to invest in IT, including project approvals and justification techniques.
- Business application needs – decisions determine the appropriate applications to be implemented for the organisation.
- IT architecture – decisions focus on technical IT implementation choices and directions, including standardisation to integrate technological alternatives to satisfy business needs.
- IT infrastructure – decisions concern the platform delivery of IT services, including network, sharing data, and common applications.

[4] IT Governance Structural Gap – difference between decision rights and accountability

affects the *business value of IT* (middle part of figure 3.1). Hypothesis H6 discusses these relationships. Hypothesis H7 examines the impacts between *monitoring mechanism* and *business value of IT* (right hand side of figure 3.1).

Figure 3.1: Detailed Research Model



3.2 IT Governance Structure (Decision Rights)

The theoretical framework highlights the need for shared services organisations to devise and implement effective IT governance structures. Identification and agreement of stakeholders' rights to participate in different levels of decision making on IT strategy and tactics is arguably the most important task of IT governance (Brown & Grant, 2005; Weill & Ross, 2004). Accordingly, deciding on the organisational form of IT in shared services organisations is a vital element of IT governance that flows from, and is concomitant with, the agreement on the exercise of decision rights. Effective IT governance structure is discussed in terms of the role of the knowledge asset, the importance of the IT resource, and the degree of shared IT. Separate hypotheses relating to the IT governance structure (H1 to H5) are suggested for each shared service delivery arrangement (see figure 3.1).

3.2.1 Main Theoretical Predictions from Resource-based View

The resource-based view (RBV) provides an avenue for shared services organisations to continuously plan and execute their organisational sourcing strategy by examining the position of their internal resources and capabilities towards achieving competitive advantage (Kristandl &

Bontis, 2007; Sheenan & Foss, 2007). To identify the resource characteristics of each IT decision domain proposed by Weill and Ross (2004) and their importance in determining an organisation's competitive advantage, RBV is used from a holistic firm perspective. Thus, this study refers to the definition provided by Wade and Hulland who distinguish IT resources into intangible and tangible IT assets and IT capabilities (Wade & Hulland, 2004). For example, hardware and software can be considered as IT assets serving as an input or output in a transformation process. In contrast, IT capabilities represent the transformation process that uses IT assets (e.g., managerial capabilities could be termed as IT capabilities). In line with IT research, the resource attributes and their peculiarities are of high importance. An IT resource enabling a firm to create a competitive advantage needs to have attributes that are rare and valuable. Wade and Hulland (2004) complement these two attributes by adding the attribute 'appropriable'. Additionally, a sustainable competitive advantage requires having the two attributes not be substitutable and imperfectly imitable.

Wade and Hulland (2004) present a set of eight classes of IT resources which are further distinguished into three types: Inside-out, outside-in, and spanning. Inside-out resources are deployed from inside the firm in response to market requirements and opportunities, and tend to be internally focused (e.g., technology development). In contrast, outside-in resources are externally oriented, placing an emphasis on anticipating market requirements, creating durable customer relationships, and understanding competitors (e.g., market responsiveness). Finally, spanning resources, which involve both internal and external analysis, are needed to integrate the firm's inside-out and outside-in capabilities (e.g., managing IS/ business partnerships, IS management and planning). The resource characteristics of each IT decision domain are mapped and detailed in Appendix A.

In general, when compared to inside-out resources, outside-in and spanning resources tend to have somewhat greater value, be rarer (but less appropriable), be more difficult to imitate or acquire through trade, and have fewer strategic substitutes. Focusing on the first two of these attributes suggests that these resources will have a stronger impact than inside-out IT resources on initial competitive position. Furthermore, because it is harder to imitate, acquire, or find strategic substitutes for the former set of resources than for the latter, outside-in and spanning resources are more likely to maintain their rarity, and thus support a sustainable competitive position for a longer period of time.

Utilising the work by Wade and Hulland (2004), this study contends that the shared services delivery arrangement and the IT decision domain are two dimensions that influence the design of the IT governance structure. Different types of shared services delivery arrangements are described to represent the degree of sharing IT services ranging from repeated discrete sharing arrangements

(i.e., intra-service) to equity joint ventures (i.e., iso-corporate). IT decision domains are analysed as IT resources and capabilities falling on a spectrum of competitive advantage creation to sustainability positions for a longer period of time.

This study predicts that if the resources are more likely to create and sustain competitive position, they are relatively higher risk and less likely to be shared, e.g., IT principles skills to enable the business, IT investment skills to prioritise and approve projects, and business application skills to specify the needs. If the resources have less impact on competitive position, they are relatively less risky and more likely to be shared, e.g., IT architecture skills to integrate technical choices and IT infrastructure skills to formulate the foundation strategies. The choice of IT governance structure is partially determined by IT decision domain attributes as well as shared services delivery arrangement characteristics. The analysis, therefore, suggests that a more business centralised decision-making approach is adopted to maintain tighter control over critical strategic resources in the client organisation. If the resource ownerships are transferred to the shared services provider or jointly owned by the stakeholders, then a shared decision-making approach should be conferred.

3.2.2 Main Theoretical Predictions from Agency View

While the resource-based view sheds light on appropriate management of an organisation's resources, agency theory deals with the proper governance of resource decisions. The resource-based view has neglected the potential presence of the agency problem (Penrose, 1995) impeding sufficient consideration of an efficient deployment of resources and capabilities (Kor & Mahoney, 2000).

Quality decision-making requires that the individual who makes a decision has the required information to make an informed choice, hence improving organisational performance (Hayek, 1945; Jensen & Meckling, 1998). The allocation of decisions rights can be done in two ways: locate the decision-making rights with the individual with the relevant knowledge, or alternatively, transfer the knowledge to the decision maker. The problem arises when knowledge is difficult to transfer, Jensen and Meckling (1998) refer to this as 'specific knowledge'. Compared with the managers who are responsible for shared services provision, client managers with firm (or business)-specific experience are more likely to envision a superior 'subjective opportunity set for the firm' (Penrose, 1995, p.42). These managers have experience-based and often tacit knowledge of existing firm-level capabilities and organisational routines. The client managers with firm (or business)-specific knowledge can also assess more precisely which opportunities emerging in the environment fit better dynamically with internal firm strengths and weaknesses, and as such these managers know better which opportunities to pursue. Therefore, the agency framework results in an

allocation of decision rights that favours the managers who have the most specific relevant knowledge of all of the agents of the firm. For example, IT investment decision rights are allocated to client business managers to support business requirements. In addition, the costs of communicating relevant specific knowledge to other decision makers can be minimised.

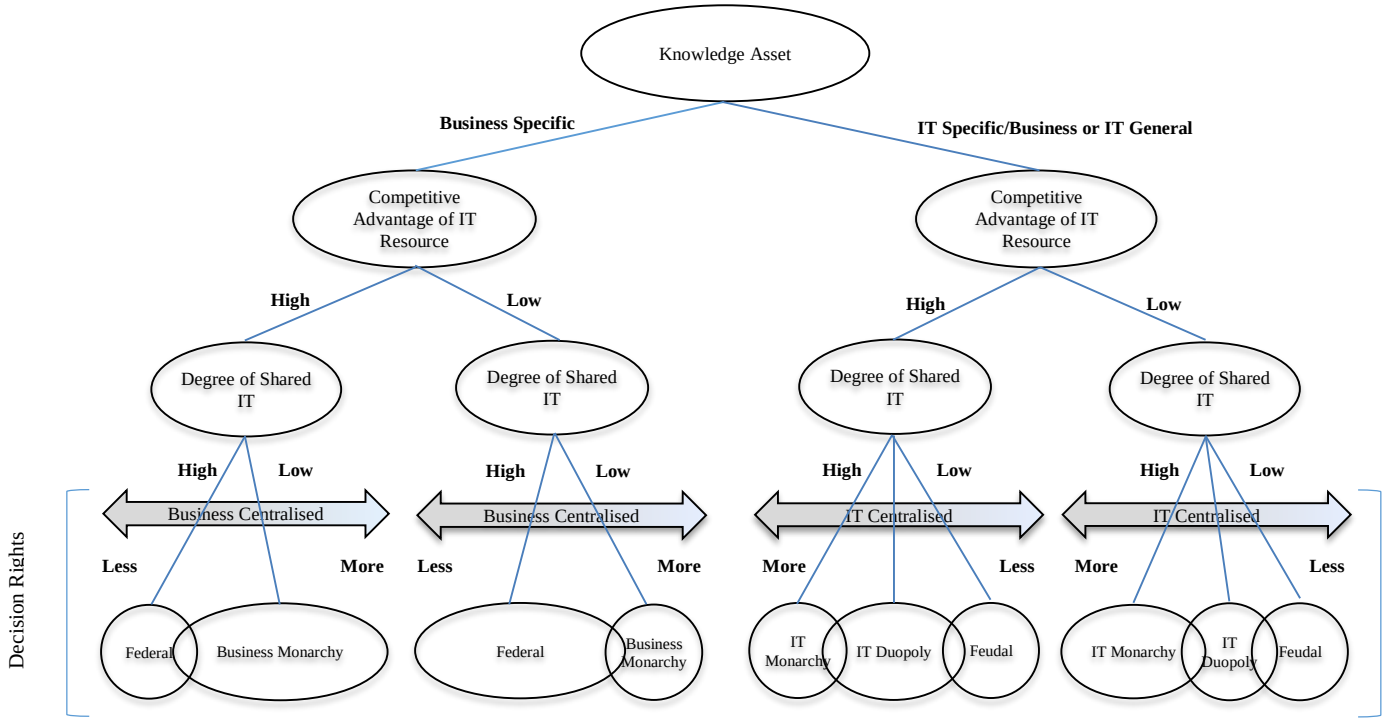
3.2.3 Allocation of IT Decision Rights

Based on the above discussion of the resource-based rationale and agency theory, this study suggests the competitive implications are influenced by the ability to integrate knowledge across functional areas (i.e., business and IT) as well as the importance of maintaining an appropriate use of resources in the client organisation. Thus, the governance structure design is affected by the strategic importance of the decision-making capabilities which convert IT resources into advantages for an organisation. This study derives several general principles from the analysis and examines, in turn, their implications for IT governance structure design.

1. The structural archetype of *anarchy* is not applicable in the shared IT environment because individual and small groups make their own decisions based only on their local needs. Anarchies are the bane of the existence of many IT groups and they are expensive to support and secure – Agency theory.
2. Because of their specific knowledge, business professionals should make business-oriented IT decisions (principles, investment, and business application needs) on which the IT decision-making capabilities (resources) might provide sustainable competitive advantage – Resource-based view and Agency theory.
3. IT professionals should make technical decisions because of their specific knowledge and in an attempt to lower coordination costs. The existence of synergies between business units is assumed – Resource-based view and Agency theory.
4. With higher degrees of IT shared services, more IT resource management ownership is transferred to the shared services provider. Business and IT professionals should collaborate on business-oriented IT decisions because of high strategic risk in managing these resources. Better decisions require the fusion of business and IT thinking – Resource-based view and Agency theory.

In accordance with the principles above, figure 3.2 represents the overarching framework for allocating the decision rights (i.e., it assists in determining the “IT governance archetype”).

Figure 3.2: Allocation of Decision Rights



This study refers to IT decision rights as the right to initiate a decision and the right to implement a decision. Looking at the figure, the first dimension examined to determine the decision rights is '*Knowledge Asset*'. *Specific* knowledge assets refer to the knowledge (e.g., local market knowledge) and skills (e.g., accounting system know-how) that cannot be easily codified and transferred to other agents, since they have an important tacit component. Therefore, the more important a person's specific knowledge asset for the generation of the residual income relative to another person, the more decision rights should be assigned to that person (Day, 1994). When *business specific* knowledge is valuable in decision-making, there are benefits to co-locating decision authority with the knowledge that is valuable to those decisions. In such cases a more *business centralised* approach (as indicated in the shaded arrows) seems to be more appropriate because the costs of transferring business specific knowledge are relatively high and cannot be easily transferred by contract (Hennart & Zeng, 2005). Similarly, *IT specific* knowledge holders will value the decision rights highly, a more *IT centralised* approach seems to be more appropriate as shown in the shaded arrows. If *IT general* knowledge relevant to decisions resides at lower levels of the provider, then decentralisation reduces knowledge transfer costs. For example, the IT Technician has knowledge that the client or higher levels do not have. The cost of transferring IT technical knowledge from the provider to the business decision makers reduces the net benefit from sharing IT services and, everything else equal, results in more IT centralisation. *Business general* knowledge assets refer to the knowledge that is inexpensive to transmit from the client to the provider. Some business process capabilities can be classified as *business general* knowledge. In

such cases, decision rights can be allocated to the provider when the costs of transferring such knowledge from the client to the provider are relatively low. Thus, as indicated in the shaded arrows, *IT centralised* approach is more suitable to effectively and efficiently support different business units through the application of standardised and consolidated business processes.

The second dimension to determine the anticipated archetype stems from control over critical IT resources that create competitive advantage, i.e., '*Competitive Advantage of IT Resource*'. According to the IT resource characteristics analysed in Appendix A, IT principles resource is a good example of a *business specific* knowledge asset, i.e., a *high* "competitive advantage of IT resource" which is potentially high value and rare. The decision making capabilities of IT principles includes management's ability to collect information from sources internal and external to the firm, as well as the dissemination of a firm's market intelligence across departments and the organisation's response to that learning. This study suggests that a more *business monarchy* decision-making approach is adopted to maintain tighter control over critical strategic resources in the client organisation. On the contrary, the IT infrastructure resource is an example of *IT specific* knowledge asset and has generally not been found to be a source of sustained competitive advantage for firms, i.e., a *low* "competitive advantage of IT resource". Hence, a more *IT monarchy* approach assumes responsibility for the more technical IT decisions.

The third dimension to influence the decision rights is the varying level of IT services collaborated with the client or offered by the provider, i.e., '*Degree of Shared IT*' as detailed in Appendix B. For governing resources that require *business specific* knowledge, as the degree of shared services increases, the *federal* approach allows business units have their own discretion with respect to business requirements and IT shared services provides the technology link to the business. For governing resources that require *IT specific* knowledge, as the degree of shared services increases, the *IT monarchy* approach enables a single point of contact to provide the cost benefits of centralisation and facilitate the changes in shared IT infrastructure. The following example illustrates the application of the decision tree for determining the IT governance archetype.

In a joint venture relationship (e.g., supra-corporate), there is a need to change IT capability in the organisation and sharing IT services is seen as a way of improving IT capability. To accomplish the objective, most IT functions are moved from the business to the shared service operation (i.e., higher degree of shared IT), such as financial application development. One key capability of the Office of Chief Financial Officer (CFO) is to understand the functionality of the underlying financial system serviced by the provider. The CFO must also understand how the software closes the books, prepares statutory reports, deals with accounting and legal obligations (i.e., *specific* knowledge to determine business application need). Certainly, the provider usually has staff that understand the functionality of the system. However, those individuals do not always understand

the intricacy of a specific organisation. Decision rights have to be retained in the client when its know-how is very specific and consequently the knowledge transfer and control costs are very high. In this case, the bargaining power of the client is relatively strong due to its non-contractual know-how. The bargaining power means that a decision made by a party will be operative. On the other hand, the provider must have a single set of technical policies and practices consistently applied by all software developments. It is, therefore, important to take advantage of integrating both client and provider's intangible knowledge assets to generate better business value of IT, decision rights should be allocated to both parties to efficiently and effectively utilise their specific knowledge. The CFO (i.e., client) must make the necessary functional (business) decisions work with the Shared Services Infrastructure Director (i.e., provider) on the IT technical decisions. A more federal approach would seem to be appropriate.

Table 3.1 summarises the prediction of the anticipated IT governance archetype for the type of shared service provision operating. Tomkinson (2007) argues the determining factor as to which is the 'best' structure to develop the shared services is not a function of the legal powers to effect the sharing as these are common to whatever the method, nor is it the formality of the agreement between the services partners as even the most informal arrangement can be governed by a legally enforceable document. The relative degree of risk or difficulty is dependent on the degree of change attempted. The more ambitious the change is, the greater the difficulty and risk of the shared services implementation would be due to more conflicting issues. Therefore, depending on the decision domains, IT governance structure can vary from more centralised approaches (most notably monarchies) to more decentralised approaches (most notably feudal designs), with federal and duopoly designs straddling the two approaches. The foregoing expectations lead to the following hypotheses (H1, H2, H3, H4, and H5) as shown in the research model (see figure 3.1).

Table 3.1: Shared Services Delivery Arrangement (SSDA) and IT Decision Domain

Shared Services Delivery Arrangement/ IT Decision Domain	**Intra-service**	**Service**	**Corporate**	**Supra-corporate**	**Iso-corporate**
Outside-In					
IT principles	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Federal[1]
IT investment	Business Monarchy	Business Monarchy	Business Monarchy	Federal[1]	Federal[1]
Spanning					
Business application needs	Business Monarchy	Business Monarchy	Federal[1]	Federal[1]	Federal[1]
Inside-Out					
IT architecture	Feudal	IT Duopoly[2]	IT Duopoly[2]	IT Monarchy[3]	IT Monarchy[3]
IT infrastructure	Feudal	IT Duopoly[2]	IT Monarchy[3]	IT Monarchy[3]	IT Monarchy[3]

[1] Federal – IT shared services management may be an additional participant
[2] IT Duopoly – IT shared services management represents IT
[3] IT Monarchy – IT shared services management acts solely

As shown in Table 3.1, more business-centralised approaches are used when making decisions for 'outside-in' resources leading to sustainable competitive advantage in most shared services delivery arrangements. As the degree of IT shared services increases (from 'intra-service'

to ‘iso-corporate’ shared services delivery arrangements), a more federal approach might be adopted to utilise both business and IT-specific knowledge efficiently for governing spanning resources. More IT-centralised approaches are used in making decisions for ‘inside-out’ resources because they are more internally efficiency-focused and their effects on competitive position are relatively lower (e.g., Jensen & Meckling, 1998).

The ‘intra-service’ shared services delivery arrangement includes limited shared services options, such as procurement and purchasing services to business units. Achieving cost efficiencies may not be the organisation’s primary objective for the ‘intra-service’ (Tomkinson, 2007). The emphasis on principles embracing integrated IT and business process capabilities, rapid organisational learning, or appropriate response to external environment may lead the ‘intra-service’ approach to adopt a ‘business monarchy’ governance model for the following types of decision-making: ‘IT principles’, ‘IT investment’ and ‘business application needs’. Wade and Hulland (2004) suggest these outside-in and spanning resources have more impact on the long-term competitive position. Therefore, a more business-centralised approach seems appropriate in ‘intra-service’ delivery arrangement which requires business leaders to be interested and well-informed about IT issues (Weill, 2004). With the ‘intra-service’ approach, the degree of IT shared services is low. There are not many IT decisions for the service provider or IT community to make. Therefore, ‘intra-service’ organisation utilises their local knowledge and institutes a decentralised approach to govern IT architecture and IT infrastructure, and they enable the shared services provider to deliver agreed ‘minimal’ IT services, such as hardware procurement. Hence, a ‘feudal’ governance design should be adopted.

H1a: An ‘intra-service’ arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.
H1b: An ‘intra-service’ arrangement for making IT architecture and IT infrastructure decisions will adopt a feudal governance design.

The ‘service’ shared services delivery arrangement aims to improve asset utilisation and it embodies a degree of formality which enables the participating group of business units and organisations to cede control to the service provider in terms of budgetary control, service specification, and etc (Tomkinson, 2007). The ‘service’ arrangement attempts to use a two-party decision-making approach that involves IT executives (i.e., provider) and a group of business leaders (i.e., client) for making its ‘IT architecture’ and ‘IT infrastructure’ decisions. The typical role of business leaders is to clarify business objectives and incorporate IT capabilities into strategy formulation. A ‘duopoly’ has the advantage over the feudal governance design in that the central IT leaders can see the enterprise as a whole and look for opportunities for sharing and reuse among business units, resulting in higher asset utilisation (Weill, 2004). A ‘business monarchy’ approach is

used to ensure that IT aligns with corporate objectives. Therefore, the business executives are responsible for ratifying 'IT principles' and handling 'IT investment' as well as 'business application needs' decisions. Wade and Hulland (2004) suggest these outside-in and spanning resources have more impact on the long-term competitive position. Therefore, decision rights must be tightly held by the business leaders in the client organisation.

H2a: A 'service' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.
H2b: A 'service' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT duopoly governance design.

As the degree of IT shared services increases, the 'corporate' shared services delivery arrangement attempts to balance the contrast between governance for profitability and governance for revenue growth and innovation (Tomkinson, 2007). To achieve a combination of business unit-driven customer responsiveness, and economies of scale and standardisation, the organisation introduces mechanisms to address both enterprise-wide and local control. Asset utilisation demands a hybrid approach, mixing elements of centralised and decentralised governance (Weill, 2004). 'Business monarchies' make all outside-in decisions (i.e., 'IT principles' and 'IT investment') which have more impact on the long-term competitive position (Wade & Hulland, 2004). The 'federal' governance approach for 'business application needs' can capitalize on potential synergies (such as shared applications) across business units. Because the 'IT architecture' is slightly higher than IT infrastructure in the overall competitive advantage (see Appendix A), the business-IT involvement approach (i.e., 'IT duopoly') in decision-making seems more appropriate. When more 'IT infrastructure' resources are shared, the provider plays an important coordinating role to interact with all business units and can thus see firm-wide opportunities for sharing and reuse across business units. Therefore, 'IT monarchy' governance design should be adopted.

H3a: A 'corporate' arrangement for making IT principles and IT investment decisions will adopt a business monarchy governance design.
H3b: A 'corporate' arrangement for making business application needs decisions will adopt a federal governance design.
H3c: A 'corporate' arrangement for making IT architecture decisions will adopt an IT duopoly governance design.
H3d: A 'corporate' arrangement for making IT infrastructure decisions will adopt an IT monarchy governance design.

The 'supra-corporate' shared services delivery arrangement attempts to maximise opportunities to leverage shared services while minimising constraints on the unique needs of related, but distinct, operating requirements across business units (Tomkinson, 2007). 'IT investment' and 'business application needs' structures are likely to be required to make sure the

architecture rules make sense for the business and take responsibility for enforcing common investment standards. A 'federal' governance approach is well served. Because of the high strategic importance of IT principles, the business should take the lead to establish realistic expectations for shared IT and focus on clarification of business strategies. Hence, this study predicts that the 'IT principles' resources should reside in the business unit or client organisation. A 'business monarchy' governance approach should be adopted. Wade and Hulland (2004) suggest the inside-out resource has less impact on the long-term competitive position. Over time, organisations can realise cost efficiencies via economies of scale by the further sharing of IT services. The responsibilities for IT infrastructure strategies and IT architecture standards can then be assigned to IT people. Therefore, the 'IT monarchy' governance design is relied on for making IT oriented decisions, such as 'IT infrastructure' and 'IT architecture'.

H4a: A 'supra-corporate' arrangement for making IT principles decisions will adopt a business monarchy governance design.
H4b: A 'supra-corporate' arrangement for making IT investment and business application needs decisions will adopt a federal monarchy governance design.
H4c: A 'supra-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.

The 'iso-corporate' shared services model attempts to realise cost-savings by capitalising on business-unit synergies often looking to higher degrees of IT shared services to remove duplications or reduce IT unit costs (Tomkinson, 2007). Their IT principles and IT investment should emphasise sharing and reuse of process, system, technology and data modules. Lawrence and Lorsch (1967) indicate that to realise organisational performance objectives, higher differentiation requires closer integration for achieving unity of effort. Business application development can take place within operating groups, but applications should be presented to users through a shared portal, and, where necessary, data should be shared across business units. Outside-in and spanning resources have a stronger impact on long-term competitive position (Wade & Hulland, 2004). Therefore, a more 'federal' governance approach should be adopted for making 'IT principles', 'IT investment', and 'business application needs' decisions. The 'iso-corporate' governance arrangement also attempts to maximise opportunities to leverage shared services. Outside-out resources have a less impact on long-term competitive position (Wade & Hulland, 2004). Hence, 'IT architecture' and 'IT infrastructure' decision rights should be held by 'IT monarchy'.

H5a: An 'iso-corporate' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a federal governance design.
H5b: An 'iso-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.

3.3 IT Governance Structural Gap

Enterprises achieving above average returns from IT investments deal with the increased complexity by clarifying who is able to make critical decisions and who is accountable for them (Broadbent, 2002). For example, getting approval of a project investment is only part of IT governance. Another challenge, the real business value of IT governance, is in the accountability systems used to produce the expected returns. This study refers to the IT governance structural gap as the difference between decision rights and delivery by connecting accountability with performance. The foregoing expectations lead to the hypothesis (H6) as shown in the research model (see Figure 3.1).

3.3.1 Presence of IT Governance Structural Gap

Any decision-making framework must also define accountability for IT decisions. Who is held responsible for decision failures and who gets credit for success? An IT governance system that creates a balance between decision rights and accountability can promote desirable decision-making with respect to IT assets (Weill & Ross, 2004). A mismatch between the two can erode relationships and promote ineffective or inefficient decision-making. For example, some organisations may treat IT shared services as a centralised cost center with a fixed budget and processes that allow IT to only react to client requests. Such an environment may not promote 'out of the box' thinking for the IT group. In this environment, if the IT leadership is held accountable for a lack of strategic direction or the inability to respond nimbly to competitor moves due to restrictive legacy systems, there will be dissonance in the shared IT group. Ultimately this dissonance will result in poor relationships between the client and provider, hence reduce the business value of IT. On the other hand, an aggressive shared IT group that is allowed to retain decision rights for major IT decisions and it has control processes in place to measure outcomes promotes innovative solutions for the business. If the accountability systems become overly stifling, however, this can again create a misalignment. In a shared services environment, conflict may also arise when the client does not give up transferred decision rights around key components of service delivery, frustrate the provider by interfering with their ability to deliver services, and also make the provider accountable for service outcomes.

H6a: Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value.

3.3.2 Assessment of IT Governance Structural Gap

In tandem with the complexity of IT governance decision rights and accountability framework as described above, the client organisation must include a process for revisiting and revising the applicability of their IT governance structure (Dahlberg & Kivijärvi, 2006; Peterson, 2004). As increased levels of diligence in governance decision-making and policy implementation are built on top of current enterprise compliance foundations, the discipline of governance gap analysis has also gained irreversible visibility and importance (Hoy, 2007; Raghupathi, 2007). When executed properly, effective governance gap analysis can ensure people take collective ownership of the governance agenda, ensuring that everyone is fully aware of the consequences for noncompliance. All shared services clients and shared services providers must have a solid sense of their roles and responsibilities reinforced by regular feedback mechanisms.

Research by Weill and Ross (2004) confirms a link between the extent of management awareness of, and compliance with, the organisation's system of IT governance, the organisation's success with the use of IT, and bottom-line business performance. Good governance design requires measurement and accountabilities. Therefore, the client organisation should formally evaluate the performance or/and commitment to the governance policies on a regular basis. Assessing an organisation's current and future ability to govern IT effectively involves validating the connection to, and extent of IT, shared services operations on corporate governance and examining the benefits of IT governance for business performance. Most importantly, the client organisation should take action to minimise the IT governance structural gap.

H6b: More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value.

3.4 Monitoring Mechanisms

Monitoring is the most commonly recommended solution to the agency problem, with the level of monitoring dictated by the extent of divergence of interests between the principal and the agents (i.e., the severity of the agency problem). Jensen and Meckling (1976) state that monitoring includes more than just measuring or observing the behavior of the agent. It includes efforts on the part of the principal (shared services client) to 'control' the behavior of the agent (shared services provider) through budget restrictions, operating rules, and the like (Jensen & Meckling, 1976, footnote 9). The foregoing expectations lead to the hypothesis (H7) as shown in the research model (see Figure 3.1).

3.4.1 Independent Review

Client-provider exchanges are those in which provider managers have power over clients by virtue of their expertise, functional indispensability, and intrinsic ambiguity associated with the services they provide. Such agency exchanges involve information asymmetry because clients do not possess the technical IT knowledge to evaluate the effort invested or the outcome accomplished by provider agents. It is important to note that this knowledge asymmetry arising from a difference in task-related knowledge is distinct from the information asymmetry with which much of the mainstream literature is concerned. For example, not knowing how the agent does a job (e.g., agile software development versus rapid application development) is distinctly different from, and compounds, the problem of not knowing what the agent does. IT managers also often suffer from 'professional syndrome' and have incentives to acquire the newest hardware and software technologies without sufficient cost justification (Mendelson, 1990). Consequently, the provider controls relevant task-related knowledge and it has the expert authority to influence greatly (if not drive) the standards of exchange.

In addition to creating difficulty in *ex post* monitoring, the asymmetry of know-how complicates the issue further by making it difficult for the clients to know *ex ante* how much of a particular service is actually needed. For example, in the IT context, knowledge of the value of a given IT task is almost always possessed by the business client, while information about the execution of the task is possessed by the IT service provider. This information asymmetry also extends to top management (the clients) who are neither completely aware of the value of information generated by IT activities to the business client departments nor of the cost and technological information possessed by the provider. In such circumstances, the provider agent not only determines what needs to be done and how to do it but it also draws upon extra-professional sources of credibility and legitimacy to decide whether certain minimum standards of practice have been met. Thus, the client is faced with the problem of constructing a control system that will maximize the net value of IT services to the firm while taking into account the existence of these information asymmetries.

Within shared services organisations, the providers are often not willing to let clients have much influence on operational issues of the service delivery (Australian Institute of Management, 2012). Even within inter-organisations, O'Donnell (2000) finds that possibilities for direct monitoring decrease as subsidiary autonomy increases. To reduce typical risks, such as deteriorating service quality, clients may engage in monitoring service providers to secure service delivery (Alsbridge, 2013). Therefore, independent professionals should serve in monitoring roles and they

should have hierarchical authority or be subject to pressures for performance and corporate reputation (Freidson, 1984).

H7a: Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value.

3.4.2 Profession-wide Oversight

Agency theory handles well those scenarios where (1) the principal (shared services client) can observe and decipher the agent's (shared services provider) actions, and where (2) the principal can establish causality from action to measurable performance and it can determine the agent's relative contribution in achieving the observed outcome, i.e., where costs of monitoring or measuring, or both, are low. During provision of knowledge-intensive IT services, however, the costs of both monitoring and measuring are high because non-IT clients only understand the specialised services and execution of associated tasks in a limited way (Mills & Moberg, 1982). To the non-IT client, the provider agent's behavior is opaque and there is a great deal of ambiguity as to the true contribution of the provider agent's efforts on the observed outcome (e.g., the cost savings and business benefits of IT shared services). Consequently, the mechanism recommended by the theory to restrain agent opportunism (e.g., behavior-based and outcome-based controls) is to have limits to the IT shared services agency exchanges.

Similarly, although agency theory relies on both internal (organisation-based) and external (market-based) forms of control to curb opportunistic behavior by managers of public corporations (Walsh & Seward, 1990), these forms of control also are applicable in the IT shared services context albeit in a limited way. Organisation-based and market-based controls that typically rely on clear measurement of performance remain only partially effective. For example, a shared services manager's evaluation is sometimes based on the quality of services provided rather than on its cost effectiveness – s/he would never get fired for buying from Telstra (Australia), AT&T (USA) or Vodafone (UK). This example demonstrates the risk-averse nature of the shared IT manager-agent, and it is termed the 'asymmetric cost' problem (Mendelson, 1990). In light of the inadequacy of direct control of shared service providers by non-IT client and of impersonal control by the market at large, this study posits that restraints on opportunistic inclinations of provider agents are accomplished by other measures, such as benchmarking, and professional accreditation.

H7b: Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value.

3.4.3 Joint Working

It is important to recognise that the emphasis on impersonal controls in the client-provider context occurs because agency theorists have been concerned with the lack of direct involvement of owners in their affairs managed by provider agents (e.g., Fama & Jensen, 1983). In a shared services environment, the position of ownership has changed from that of an "active agent" to that of a "passive agent". Compared with the owner (supervisor)-manager relationship which the owner could exercise direction and for which he was responsible, the client now holds a piece of paper (e.g., SLAs) representing a set of expectations with respect to an enterprise. 'Passive' ownership, arising from the absence of shareholders routinely managing their company's operations, is a unique feature of a separate and distinct shared services organisation.

Inevitably, there should be a great deal of consultation and interaction between provider and client as the former customises a well-defined set of specialised knowledge to serve the particular needs of the latter service encounters (Mills, 1990). Unlike owners and managers, the client and provider agent coproduce the service in question. Consequently, issues such as social influence and trust become vital in examining client-provider exchange. Moreover, as Mills and Moberg (1982) argue, since there are ambiguous cues and few objective reference points to evaluate the value of IT shared services, even the perceptions of customers about service quality and output often are subject to social influences exerted by service provider. This study posits that client involvement and frequent interaction, e.g. through boundary spanners, can be an effective 'control strategy'. For example, involvement of clients in service operations may promote the sharing of tacit knowledge in a 'controlled way' which allows providers to build up client-specific expertise, and also gives the client the opportunity to 'oversee' this process to some extent. This study also assumes that if the client interacts frequently with the provider and the client gets involved in service operations, knowledge to evaluate performance can be generated. In a similar fashion, Takeishi (2001) revealed client involvement embraces problem-solving processes with the client, frequent face-to-face communication, as well as a sufficient level of knowledge transfer.

Hence, the active involvement of the client in the development of the service product is a unique and distinctive feature of client-provider agency in the IT shared services environment. The theoretical significance of joint-production of services is that it emphasises economic, as well as social, aspects of exchange, and it highlights the need for provider agents and clients to work together to attain joint outcomes. Active coordination, in turn, generates dynamics in the exchange not easily captured within the framework of agency theory.

H7c: Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value.

3.5 Chapter Summary

This chapter formulates seven hypotheses (H1 to H7) from the research model. Organisations are proposed to govern differently depending on the combination of delivery arrangements and the IT decision domain (H1 to H5). Alignment and assessment of the IT governance structural gap are proposed to influence business value of IT (H6). In addition, monitoring mechanisms are also antecedents of business value of IT (H7). The next chapter discusses the research methodology used to empirically test the developed model.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter describes the research methodology adopted in this thesis. Section 4.1 outlines the philosophy that underpins the approach taken in this research. Section 4.2 discusses the development of the survey instrument, including the sourcing of items, the design of questions, the content validation using a judgmental approach, and the execution of an expert study to establish internal consistency and reliability. Section 4.3 presents the pilot study used to refine and validate the survey instrument. Section 4.4 provides an overview of the data collection methods used for the main study. It also highlights the ethical considerations, the survey administration process, and the approach used to identify the organisations to contact in the course of the questionnaire distribution. Section 4.5 discusses the data preparation. The chapter concludes with a section on the response rate of the survey. Section 4.7 contains the summary.

4.1 Research Setting and Design

This study develops and applies the research model to guide a comprehensive analysis of IT governance issues in a shared services environment. All research is based on some underlying guiding philosophical assumptions. These assumptions determine the research philosophy subscribed to, the research strategy employed, and the research instruments used. Crotty (1998) outlined a schema to understand the research process. The schema consists of four elements: epistemology, theoretical perspective, methodology, and methods. Table 4.1 presents how this research fits into Crotty's taxonomy.

Table 4.1: Elements of Research Setting

Epistemology	Theoretical Perspective	Methodology	Methods
Objectivism	Positivism	Survey Research	Statistical Analysis

First, objectivism is the epistemological view that things exist as meaningful entities independently of consciousness and experience (Crotty, 1998). This research subscribes to the objectivist perspective because the researcher conducts the study based on the assumption that evidence about the research question could be obtained through logical analyses of measurable facts.

Second, the positivist researcher approaches or views the world as objective and seeks measureable relationships among variables to test and verify their study hypotheses (Swanson & Holton III, 2005). This research uses the relationships between the shared services delivery arrangements and IT governance structures. It then examines the factors of IT governance structural gap and monitoring mechanisms (independent variables) to determine the business value generated from IT (dependent variable) among shared services organisations. Hence, this research empirically

tested seven hypotheses and as such falls under the positivist paradigm (Malhotra, 2002; Orlikowski & Baroudi, 1991).

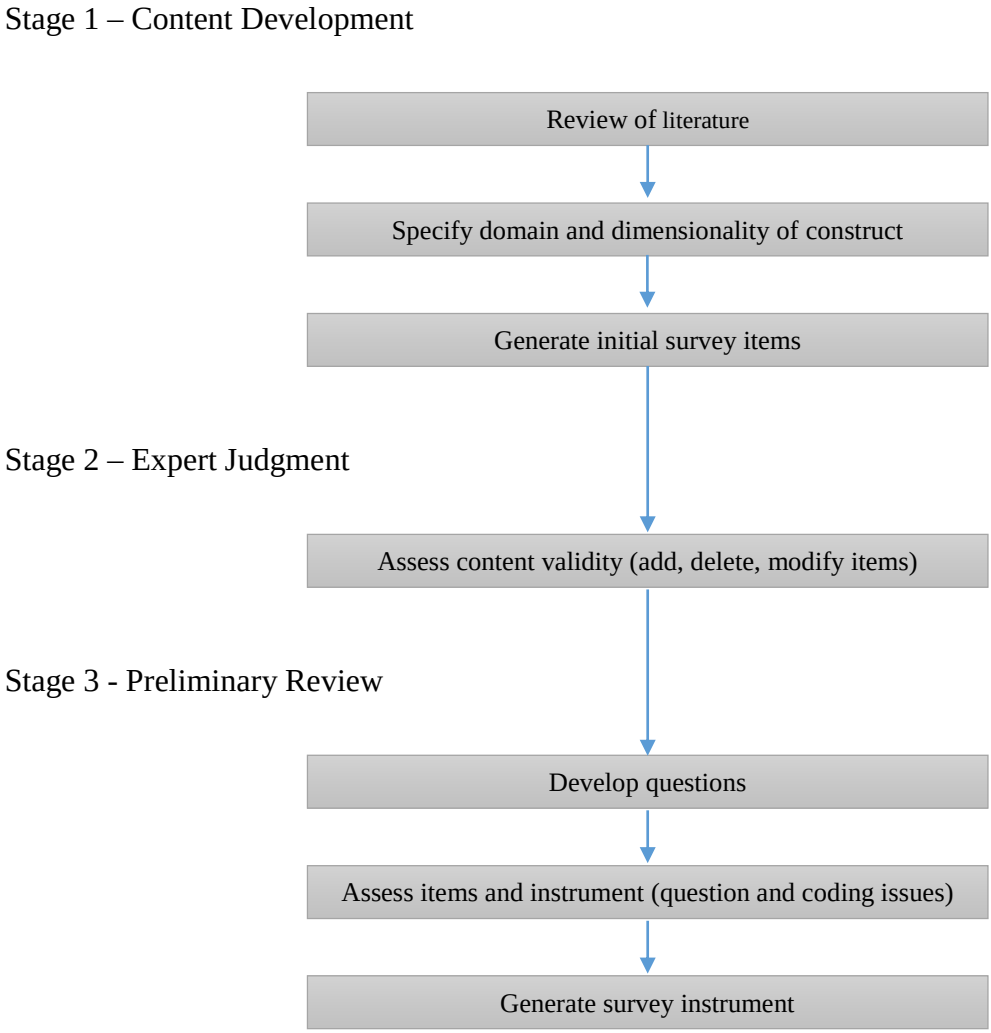
Third, survey research is concerned with drawing a sample of subjects from a population and studying them to make inferences about the population (Saris & Gallhofer, 2007). To test the hypotheses in this study, a large amount of cross-sectional data is needed. Therefore, the quantitative approach is more appropriate for this study than the qualitative approach. A survey method was used to collect the required data. This method is well suited to gathering demographic data that describe the composition of the sample. Furthermore, survey research can be conducted in different settings, it requires minimal investment to develop and administer, and it is relatively easy for making generalizations. It can also elicit information about attitudes that are otherwise difficult to measure using observational techniques (Rea & Parker, 2012).

Fourth, quantitative methods of research means that a deductive approach is used, as such an approach allows for the setting up of a conceptual and/or theoretical structure before that structure is tested through the use of scientific instruments or other forms of empirical observation (Gill & Johnson, 2010). There are several reasons why using the statistical analysis approach is appropriate. IT governance research acknowledges its complex and dynamic nature and it consists of a set of interdependent subsystems (e.g., structures, processes and relational mechanisms) that deliver a powerful whole (Peterson, 2003; Sambamurthy & Zmud, 1999). However, this phenomenon can be broken down into smaller components and assigned numeral values for analysis. Quantitative research is useful for dividing the population into groups, whose members are similar to each other and distinct from other groups, e.g., shared services client versus provider.

4.2 Instrument Development

Validation of research instruments is critical in maintaining rigor in IT research. A valid instrument is one which measures what it is supposed to measure (DeVellis, 2003) and it enables researchers to interpret variables and the relationships between variables in a more theoretically meaningful fashion (Bagossi, 1980). This study divided the instrument validation process into three stages: content development, expert judgment, and preliminary review (Lewis et al., 2005; Moore & Benbasat, 1991). Figure 4.1 outlines the process used to develop the survey instrument.

Figure 4.1: Process of Survey Instrument Development



Source: Modified from Lewis et al.(2005)

4.2.1 Content Development

The constructs were conceptually defined based on literature in the content development process. The domains and conceptual definitions of the constructs were specified in Appendix B. A set of items was then generated from numerous sources for each construct, such as literature, existing questionnaires, and case studies. These items were arranged in a suitable sequence for the preparation of the initial survey instrument.

4.2.2 Expert Judgment

The primary goal of the expert judgment process was content validation. Newly-developed items and those adapted from existing instruments were reviewed, validated and improved through an expert judging exercise. The aim of this process was to retain the best items which were believed to adequately measure a desired construct domain. This study utilised a quantitative procedure

developed by Lawshe (1975) to assess the content validity. Expert judgment is essentially a method for gauging agreement among raters or judges regarding how essential is a particular item. A panel of subject matter experts in IT governance and shared services was formed to evaluate whether the test items assess defined content.

The researcher sent the panel an initial questionnaire and asked them to evaluate the relevance of each item to the construct on a three-point scale: '1 - Not Relevant,' '2 - Important (But Not Essential),' '3 - Essential.' Each question had two text areas to fill in additional items and other comments. Follow-up discussions with experts were held when clarification of returned information was required. Items were eliminated if the statistical results were below the minimum threshold value.

4.2.2.1 Expert Panel Selection

The selection of the right experts lends content validity to the task (Best, 1974; Jolson & Rossow, 1971; Tersine & Riggs, 1976). Therefore, the participation of the right kind of experts is critical. The experts need to understand the issues, have a vision, and represent a substantial variety of viewpoints. The researcher invited a panel of 16 experts to participate in the judgment exercise. Expertise was determined by publication, by conference activities, by position filled (past and present) and by general contribution to the IT governance and shared services fields. The expert panel consisted of the following groups: industry consultants (2); IT governance certified trainers & consultants (2); IT governance professional association members (2); industry practitioners from two large organisations (4); doctoral students (2); academic experts (2); journal article authors (2). By inviting people from each group, a panel was created where different views of governance and shared services were well represented. The panelists were sent five sets of questions and asked to comment on the content and clarity of the construct domains: *business value, independent review, profession-wide oversight, joint working, and gap assessment*.

4.2.2.2 Expert Panel Judgment

From the data provided by the expert panel, a content validity ratio (CVR) was computed for each item. Lawshe (1975) only utilised the '3 - Essential' response category in computing the CVR. However, a less stringent criterion (both 2 and 3) could also be justified because responses of both 'Important (But Not Essential)' and 'Essential' are positive indicators of an item's relevance to the construct. The CVR for each item was evaluated for statistical significance, using the table published in Lawshe (1975). Statistical significance implies some level of content validity for the item, whereas statistical non-significance indicates an unacceptable level of content validity. When

an expert panel is composed of sixteen members, a minimum CVR of 0.49 is required to satisfy the five percent level. At this point, items that are not statistically significant based on their CVR should be dropped from the instrument.

Statisticians point out that higher category frequencies are generally associated with higher inter-rater agreements as the number of rated observations is increased. As a result, agreement due to chance is enhanced, particularly if rater variability is low (Hartmann, 1977; Soeken & Prescott, 1986; Wakefield, 1980). Consistent ratings by experts are therefore often due to chance, and these ratings incorrectly indicate higher levels of agreement (Suen & Ary, 1989). Due to concerns about the risk of chance agreement among the experts, a second analysis of multirater agreement was undertaken. The Online Kappa Calculator developed by University of Joensuu, Finland, was used to calculate the multi-rater kappa statistic and inter-rater agreement was reexamined (Randolph, 2005).

Kappa is sensitive to the number of cases made, the distribution of the data, and the presence of bias among raters. For these reasons, a kappa may be low despite higher values of proportion agreement (Banerjee & Fielding, 1997; Brennan & Hays, 1992). Free-marginal versions of kappa are recommended when raters are not restricted in the number of cases that can be assigned to each category. The multi-rater Kappa is not influenced by prevalence and it is appropriate for common situations in most reliability or agreement studies (Randolph, 2005). Values of kappa can range from -1.0 to 1.0, with -1.0 indicating perfect disagreement below chance, 0.0 indicating agreement equal to chance, and 1.0 indicating perfect agreement above chance. In the literature, several authors provide information about the magnitude or the amount of proportion that is sufficient for indicating higher levels of inter-rater proportion agreement. For example, Landis and Koch (1977) provided benchmarks for various levels of kappa magnitude and strength of agreement. Kappa values from 0.20 to 0.39 are ‘fair’, 0.40 to 0.59 are ‘moderate’, 0.60 to 0.79 are ‘substantial’ and 0.80 and above are ‘almost perfect’.

The CVRs of ‘business value’ items were calculated as a means of quantifying the degree of consensus among the panel of 16 experts, who evaluated the scales for content validity. The CVRs according to the expert panelists ranged from -0.50 to 1.00 for the business value (Table 4.2). Six items received a CVR below the acceptable level of relevance (0.49) and they were eliminated. Kappa has statistical properties that reflect formal reliability theory regarding the stability of measures. Individual multi-rater kappa values were examined for each of the 23 items and ranged from k = -0.05 to 1.00. Sixteen out of twenty-three items were below the ‘substantial’ agreement of 0.60. The experts’ multi-rater agreement about the relevance of business value items were low and most likely due to different views of business value generated from shared IT. One industry expert commented:

'There are many reasons why an IT shared services model could be chosen. The essential objective of one organisation may not be relevant to another. The assessments provided here are based on an overall assessment and not specifically related to any specific organisation or shared service set-up.'

The perceived objectives of IT shared services varied widely among the panelists. A journal article author also suggested including other motives of business value, such as innovation, scarcity of expertise, consistency of service level management, and the like. An industry consultant elaborated further on his assessment:

'The objectives of shared services will change depending on whether the organisation wants to share services to reduce costs or increase quality (or a combination of the two). To support my above statement, one of the big misunderstandings about shared services is that it is done to save costs. A more effective way to gain business benefits is to focus on value. Sometimes, costs will go up, but the focus should on quality improvement which can deliver more value in the long term. There may be additional costs with building quality across a larger organisation.'

Therefore, maintaining a variety of reasons for deploying IT shared services as the 'business value' measures seems to be appropriate. A decision was made to retain three items with lower scoring k = 0.53 ('moderate' agreement) because they had high relevance (CVR = 0.75). Items receiving lower kappa coefficients were consistent with items having lower CVR ratings; therefore, thirteen items in total were eliminated. The ten items shaded in Table 4.2 were retained in the resulting instrument.

Table 4.2: Content Validity Ratio and Kappa Value – Business Value

Items	Judged as relevant by experts (n = 16)	CVR	Kappa value	Action
To refocus on core business	16	1.00	1.00	Retain
To improve the capability of IT to support the needs of business operations	15	0.88	0.75	Retain
To share IT risks within approved risk limits	15	0.88	0.75	Retain
To improve the management of technology and human resources	15	0.88	0.75	Retain
To support consolidation or integration	15	0.88	0.75	Retain
To reduce IT expenditure	15	0.88	0.75	Retain
To improve control over IT expenditure	13	0.63	0.35	Eliminate
To enhance economies of scale in IT resources	14	0.75	0.53	Retain
To reduce overcapacity by consolidation of systems.	14	0.75	0.53	Retain
To leverage IT purchasing.	15	0.88	0.75	Retain
To increase productivity.	13	0.63	0.35	Eliminate
To fund IT centrally.	8	0.00	-0.07	Eliminate
To improve financial freedom and flexibility (releasing capital, flexibility in budgeting and investments).	11	0.38	0.08	Eliminate
To increase profitability.	11	0.38	0.08	Eliminate
To standardize IT environment (hardware, software, processes).	13	0.63	0.35	Eliminate
To ensure the availability of necessary or new IT skills.	12	0.50	0.20	Eliminate
To ensure the availability of necessary or new technology.	11	0.38	0.08	Eliminate
To establish a well-functioning IT environment.	14	0.75	0.53	Retain
To enhance credibility.	6	-0.25	0.00	Eliminate
To solve internal conflicts.	4	-0.50	0.20	Eliminate
To improve user satisfaction.	12	0.50	0.20	Eliminate
To improve the availability of services (e.g. more services, 7d/24h).	12	0.50	0.20	Eliminate
To improve the quality of services (a safe, reliable service corresponding to our needs, capable of adapting to individual requirements).	12	0.50	0.20	Eliminate

Four out of five ‘independent review’ items received CVRs above the acceptance level of 0.49. Levels of multi-rater agreement varied across individual items on the domain from 0.20 to 0.75, reflecting the need for subjectivity in rating certain criteria (Table 4.3). The statistically significant item (CVR = 0.88, k = 0.75) ‘substantial agreement’ was kept. The item of marginal CVR and ‘poor’ agreement with kappa value = 0.2 was eliminated. One expert suggested the definition should be made clear and specifically linked to ‘shared IT policy and agreement monitoring’. Once done, the remaining two items (CVR = 0.63, kappa = 0.35) would match the revised domain definition and they were retained in the resulting instrument. A pilot test was employed later to determine if these two items adequately represented the construct.

Table 4.3: Content Validity Ratio and Kappa Value – Independent Review

Items	Judged as relevant by experts (n = 16)	CVR	Kappa value	Action
Dedicated officer responsible for monitoring compliance with the terms of the shared IT services agreement	13	0.63	0.35	Retain
Local IT/business unit takes an active and direct role in overseeing operating policy for the shared IT services	13	0.63	0.35	Retain
Local IT/business unit has control on the design and operation the shared IT services	12	0.50	0.20	Eliminate
Local IT/Business unit has much influence on the operation of the shared IT services	11	0.38	0.08	Eliminate
Formal workgroup or focus group to address specific shared IT services initiatives and assist in the development of IT services products	15	0.88	0.75	Retain

The CVRs of all ‘profession-wide oversight’ items are above the acceptance level of 0.49. Item by item kappa values varied from 0.35 to 0.75 (Table 4.4). Three indicators showed ‘fair’ agreement, four showed ‘moderate’ agreement, and one showed ‘substantial’ agreement. The relatively low levels of agreement for most of the items were associated with experience of benchmarking, practical implementation and professional knowledge of governance frameworks, such as COBIT & ITIL. Within the inter-rater groups, there were negative agreements as to which framework tools were judged to be relevant, e.g., difference views within two academic experts, and between consulting practitioners and organisation practitioners. In the follow-up interviews, the raters remarked on the difficulty of applying professional frameworks in practice and they might have made implicit judgments about the items in this domain. Therefore, low kappa value items (k = 0.35 ‘fair’ agreement and k = 0.53 ‘moderate’ agreement) were considered to be the acceptable levels of kappa value. All eight items were included in the resulting instrument. A pilot test was employed later to determine if these items adequately represented the construct.

Table 4.4: Content Validity Ratio and Kappa Value – Profession-wide Oversight

Items	Judged as relevant by experts (n = 16)	CVR	Kappa value	Action
Benchmark the ‘cost’ target against standard of best-practice	14	0.75	0.53	Retain
Benchmark the ‘quality’ target against standard of best-practice	15	0.88	0.75	Retain
Benchmark the ‘customer satisfaction’ target against standard of best-practice	14	0.75	0.53	Retain
Benchmark the ‘timeliness’ target against standard of best-practice	14	0.75	0.53	Retain
Make use of ‘Control Objectives for Information and related Technology (COBIT)’ IT governance framework	13	0.63	0.35	Retain
Make use of ‘Information Technology Infrastructure Library (ITIL)’ framework	14	0.75	0.53	Retain
Make use of ‘Information Security Management (ISO 27002)’ framework	13	0.63	0.35	Retain

Items	Judged as relevant by experts (n = 16)	CVR	Kappa value	Action
Make use of 'Quality Management (ISO 9000)' framework	13	0.63	0.35	Retain

The experts judged that the 'joint working' items had good face validity. CVRs were 0.75 and 1.0 which indicated nearly all the items were relevant (Table 4.5). All the multi-rater kappa values were 0.75 or above, representing no apparent difference among the judges. Several experts commented that the 'joint working' domain was important to shared services within the definition. All items were included in the resulting instrument.

Table 4.5: Content Validity Ratio and Kappa Value – Joint Working

Items	Judged as relevant by experts (n = 16)	CVR	Kappa value	Action
Participate in our business with positive attitude	15	0.88	0.75	Retain
Are very interested in each other's problems	16	1.00	1.00	Retain
Encourage each other to solve business problems	15	0.88	0.75	Retain
Share business knowledge of core business processes if necessary	15	0.88	0.75	Retain
Exchange information that help the establishment of business planning	15	0.88	0.75	Retain
Share environmental information that affects each other's business	15	0.88	0.75	Retain

CVRs were significantly high in the 'IT government structural gap assessment' items and ranged from 0.86 to 1.00 (Table 4.6). The multi-rater kappa values were above 0.70 which indicated an excellent positive level of agreement. The resulting instrument was prepared by making minor modifications in the wordings and language according to the suggestions of the experts, e.g., the term 'IT governance' should be clearly specified and the tenses used in the item statements should be consistent.

Table 4.6: Content Validity Ratio and Kappa Value – Gap Assessment

Items	Judged as relevant by experts (n = 14)	CVR	Kappa value	Action
Utilise formal IT governance tools…	13	0.86	0.71	Retain
Map the current governance structure…	14	1.00	1.00	Retain
Evaluate our IT governance awareness and engagement…	13	0.86	0.71	Retain

4.2.3 Preliminary Review

The two main purposes of the preliminary review were to address the question issues and data coding issues for the resulting instrument from the expert judgment exercise. The question issues were primarily concerned with the content, design, and usability of the instrument. For example, did the respondents understand the words, terms, and concepts being used? Did they understand the question and the answer choices from which they were to select? The preliminary review could also address potential coding and data analysis issues. Constructing code categories and coding responses were examined. For example, could meaningful categories be constructed from respondents' answers? Were respondents' answers within the framework of expected responses?

Based on the results from the expert judgment exercise, a total of 30 items ('business value' domain = 10 questions; 'independent review' domain = 3 questions; 'profession-wide oversight' domain = 8 questions; 'joint working' domain = 6 questions; 'gap assessment' domain = 3 questions) were placed in the preliminary review instrument. To measure the IT governance structure, five existing questionnaire items developed by Gonzalez-Mesa Hoffmann and Weill (2004) and the scales developed by Grover, et al. (2007) were used ('IT governance structure – decision rights' & 'IT governance structure – accountability' domains = 5 questions). The personal profile (1 question), organisational profile (4 questions) and shared services delivery arrangement (8 questions) were integrated in the instrument for preliminary review.

Four industry and academic contacts were invited to participate the preliminary review of resulting instrument: an IT shared services executive, an IT shared services consultant, a business unit leader, and a doctoral student. The time required to complete a survey provides an indication of possible reasons for failure to complete the questionnaire because of design and format problems. The preliminary review respondents completed all the questions between 15 and 37 minutes. Follow-up feedback indicated which questions presented content problems with regard to clarity, specificity, appropriate language, and relevance. In particular, two respondents reported difficulties relating to the decision-right and accountability allocations because the information was never formally measured and reported within the organisations. However, the respondents understood the concept and intention to measure the IT governance structural gap. They believed the questions were relevant and essential to this study. The detected "problem questions" suggested that further consideration be given, however, it was deemed unnecessary to make major alterations. Due to the potential complexity of organisation structure in the shared services environment, further clarification for the roles of each decision makers was provided in the final instrument.

A possible coding issue was identified in the question set of 'shared services delivery arrangement'. The researcher believed that some questions might be excessive and that they posed problems for classification. Although these questions could provide additional information about the characteristics of different shared services delivery arrangement, they were removed to simplify the instrument. Even though the survey was considered to be long, it was easy to understand. The respondents believed that completion commitment would be maintained (Appendix C).

4.3 Pilot Study

In a quantitative study, a survey instrument that is researcher-designed needs a pilot study to validate the effectiveness of the instrument and the value of the questions to elicit the right information to answer the primary research questions (Saunders et al., 2009). The pilot study precedes the main study to correct any problems with the instrument or other elements in the data

collection technique. The four main purposes of the pilot test were to check that the questions are understandable; to assess the likely response rate; to ensure that the data analysis techniques match the expected responses; and to evaluate the reliability and validity of the instrument. Reliability is concerned with how well this study can reproduce the survey data, as well as the extent of measurement error. By contrast, validity is concerned with how well the instrument measures what it is supposed to measure.

4.3.1 Pilot Study Participants

The pilot study instrument, an online questionnaire, was distributed to 170 individuals. A purposive sampling procedure was used to select participants that are representative of the population. Therefore, it was important to identify organisations that actively engaged in IT shared services arrangements mechanisms, and identify respondents within those organisations who were involved with, and most knowledgeable about, the IT governance activities. A list of potential survey respondents was obtained from shared services conference organisers, IT professional communities, IT consulting firms, and references from other IT shared services organisations. Respondents were chosen from diverse domains of the organisational personnel, and their job functions. These personnel included the chief executive officer, the chief operating officer, the chief information officer, senior members from business units and IT shared services units.

A cover letter that ensured respondent anonymity accompanied the research instrument. Approximately one to two weeks after the online questionnaires were distributed the researcher sent follow-up reminders for the purpose of response rate maximisation. The participants were given four weeks to complete the pilot study instrument. Thirty-one responses (i.e. 18.2%) were received, 5 respondents did not use IT shared services, and 26 questionnaires were complete or semi-complete. The data was entered into the IBM SPSS® Statistics version 19 software package and checked for incorrect entries and missing data. The final sample size of 21 was deemed suitable for analysis. The respondent and organisation profiles are shown in Table 4.7.

Table 4.7: Respondent Profile for Completed Pilot Survey

Role	Response
Top Management Executive	4
Business Unit Leader	11
Local IT Unit Leader	2
IT Executive - Shared Services	1
Other (IT governance, Commercial Manager - Projects, Corporate Planning Manager)	3
Total	**21**

4.3.2 Pilot Study Findings

Analysis of the pilot study data involved two distinct stages. The first stage entailed factor analysis whereas the second stage entailed reliability analysis. Both stages of the data analysis were

conducted in SPSS. Confirmatory Factor Analysis (CFA) was used to refine and validate the measurement scales. CFA was identified as an appropriate statistical test particularly as the researcher had knowledge of the number of factors that were required to explain the inter-correlations among the measurement variables (Sureshchandar et al. 2002). Additionally, the researcher had knowledge about the observed variables that were more likely to be reliable indicators of a particular factor (Sureshchandar et al. 2002). Given the fact that the proposed research model was based on logic, previous empirical research and theoretical findings, the CFA approach was considered the most appropriate method to statistically confirm the proposed factors of the five domains. Reliability analysis is a technique that assesses the internal consistency, or common core, of scale items (Hair, Anderson, Tatham & Black, 1998).

Prior to the extraction of the factors, several tests should be used to assess the suitability of the respondent data for factor analysis. These tests include Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (Kaiser, 1970; 1974) and Bartlett's Test of Sphericity (Bartlett, 1950). The KMO index, in particular, is recommended when the cases-to-variable ratio is less than 5:1. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis (Child, 2006). The Bartlett's Test of Sphericity should be significant ($p < 0.05$) for factor analysis to be suitable (Child, 2006). Examining the sufficiency test of data, KMO values are greater than the recommended value of 0.5 for all domains, thus indicating the suitability of the data for factor analysis (Table 4.8). The Bartlett's test for 'independent review' is significant ($p < 0.05$). The other four domains 'business value', 'independent review', 'professional oversight' and 'joint working' are also highly significant ($p < 0.001$), making the factor analysis appropriate.

Table 4.8: Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity

Domains	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	Sig.
Business Value	.721	172.561	45	.000
Independent Review	.597	11.909	3	.008
Professional Oversight	.525	75.214	28	.000
Joint Working	.828	63.093	15	.000
Gap Assessment	.658	34.628	3	.000

The 30 items of 'business value', 'independent review', 'professional oversight', 'joint working', and 'gap assessment' were factor analysed using the maximum likelihood method. The maximum likelihood method of factor extraction is posited as theoretically superior to other methods (Basilevsky, 2009). Generally, a factor solution which accounts for more than 30% of the total variance is considered adequate.(Costello & Osborne, 2005) The factor analysis results are shown in Table 4.9.

Table 4.9: Factor Loadings and Communalities Based on Maximum Likelihood Extraction

Items	Factor Loading					Communality
	Business Value	Independent Review	Professional Oversight	Joint Working	Gap Assessment	
To establish a well-functioning IT environment	.402					.544
To enhance economies of scale in IT resources	.643					.764
To reduce overcapacity by consolidation of systems	.584					.895
To leverage IT purchasing	.738					.726
To refocus on core business	.444					.808
To improve the capability of IT to support the needs of business operations	.944					.949
To share IT risks within approved risk limits	.964					.962
To improve the management of technology and human resources	.769					.720
To support consolidation or integration	.881					.883
To reduce IT expenditure	.838					.788
Formal workgroup or focus group to address specific shared IT services initiatives and assist in the development of IT services products		.855				.431
Dedicated officer responsible for monitoring compliance with the terms of the shared IT services agreement		.397				.126
Local IT/business unit takes an active and direct role in overseeing operating policy for the shared IT services		.745				.413
Benchmark the 'cost' target against standard of best-practice			.380			.745
Benchmark the 'quality' target against standard of best-practice			.970			.845
Benchmark the 'customer satisfaction' target against standard of best-practice			.615			.745
Benchmark the 'timeliness' target against standard of best-practice			.921			.835
Make use of 'Control Objectives for Information and related Technology (COBIT)' IT governance framework			.244			.270
Make use of 'Information Technology Infrastructure Library (ITIL)' framework			-.009			.516
Make use of 'Information Security Management (ISO 27002)' framework			-.188			.578
Make use of 'Quality Management (ISO 9000)' framework			.141			.420
Participate in our business with positive attitude				.917		.740
Are very interested in each other's problems				.812		.638
Encourage each other to solve business problems				.761		.579
Share business knowledge of core business processes if necessary				.659		.418
Exchange information that help the establishment of business planning				.694		.596
Share environmental information that affects each other's business				.702		.643
Utilise formal IT governance tools…					.679	.461
Map the current governance structure…					.999	.779
Evaluate our IT governance awareness and engagement…					.851	.724
% of variance explained	**61.677**	**62.324**	**35.068**	**64.842**	**80.287**	
Eigenvalues	**6.168**	**1.870**	**2.805**	**3.891**	**2.409**	

The 'business value' factor accounted for 61.7% of the variance. Ten questions loaded onto this factor. The second factor contained the three questions relating to the 'independent review' and accounted for 62.3 % of the variance. The eight questions which loaded onto the third factor related to 'professional oversight'. This factor accounted for 35.1% of the total variance. The fourth factor 'joint working' accounted for 64.8% of the total variance and the fifth 'gap assessment' accounted for 80.2% of the total variance. Generally, a factor solution which accounts for more than 30% of the total variance can be considered adequate. The analysis identified 1 item 'make use of Control Objectives for Information and related Technology (COBIT) IT governance framework' with

communality less than 0.3. Generally, a variable is said to load on a factor if its loading is higher than 0.3. However, this item was retained due to its strong conceptual fit with the 'independent review' factor.

All the items, except four items, had their factor loading greater than 0.4. The four items were 'make use of Control Objectives for Information and related Technology (COBIT) IT governance framework', 'make use of Information Technology Infrastructure Library (ITIL) framework', 'make use of 'Information Security Management (ISO 27002) framework', 'make use of Quality Management (ISO 9000) framework'. All four items had factor loadings below 0.3. These four items represent the adoption of the four different governance frameworks. Organisations may adopt single or multiple frameworks, in particular COBIT or/and ITIL. Managers are advised that IT service management and governance frameworks are not mutually exclusive, and when combined provide powerful IT governance, control and best practice in IT service management (Smallwood, 2014). The scales for these four items were subsequently submitted to reliability analysis using Cronbach's alpha coefficient (Cronbach, 1951). The acceptance range of alpha coefficients is 0.5 to 0.6 (Nunnally, 1967). The Cronbach's alpha coefficients for the five factors ranged from 0.693 - 0.924 (Table 4.10). All reliability measures were in excess of what Nunnally (1967) regarded as minimally acceptable and demonstrated high internal consistency. All items for all factors were thus retained.

Table 4.10: Cronbach's Alpha Results

Domains	Number of items	Cronbach's alpha
Business Value	10	.924
Independent Review	3	.693
Professional Oversight	8	.714
Joint Working	6	.891
Gap Assessment	3	.875
Overall score	**30**	**.904**

Follow-up feedback for any "unsuitable responses" with regard to clarity, specificity, appropriate language, and relevance was obtained. Each returned questionnaire was also checked for any difficulties that respondents may have encountered when completing the questionnaire. No significant comments were made about the difficulty in answering the instrument. Thus, no major modification and/or correction were made to any construct. Additionally, no major comments were made about the timing, format, and structure. Therefore, the layout and presentation of the instrument was not altered. Responses from the pilot test were not included in the final sample.

4.4 Data Collection Procedures

4.4.1 Ethical Considerations

The main study was conducted with conscious attention to a number of ethical principles (McNamara, 1994). First, care was taken to ensure that the participants fully understood the nature of the study and participation was completely voluntary. This information was detailed in a preface to the questionnaire (Appendix C). To encourage a higher response rate, incentives and multiple contacts were used via a Web research panel and survey specialist (Dillman, 2009; Millar & Dillman, 2011). McNamara's (1994) second ethical guideline is to avoid possible harm to respondents. This could include no embarrassment or feeling uncomfortable about questions and survey results. As discussed in the previous section, the research instrument was thoroughly reviewed by peers and supervisors to ensure that sensitive questions were avoided. The cover email for the questionnaire also explained that the results of the study would be used in a dissertation as partial fulfilment for a Doctoral degree. The third ethical guideline is to protect a respondent's identity. This requirement can be accomplished by exercising anonymity and confidentiality. A survey is anonymous when a respondent cannot be identified on the basis of a response. To avoid confusion, the cover email for the questionnaire clearly identified the survey as being confidential in regards to responses and the reporting of results. The fourth ethical guideline, as described by McNamara (1994), is to accurately report both the methods and the results of the surveys to professional colleagues in the educational community. The advancements in academic fields come through honesty and openness, the researcher assumes the responsibility to report problems and weaknesses experienced as well as the positive results of the study. Finally, approval from the Ethical Review Committee of the University Queensland Business School to undertake the survey within the frame of this study was sought and granted.

4.4.2 Survey Administration

The data were collected in February 2012. The participants were instructed that the study was being conducted to explore their IT governance practices with respect to the entire IT function organisation-wide, not just the central/shared IT organisation or local IT department. The survey consisted of three major parts. The first part included 'screening' questions to make sure that only those people who used or provided IT shared services would participate in the survey. The respondents were asked their roles in relation to IT shared services, their annual expenditure spent on IT, and the portion of total IT expenditure directly managed by IT shared services. The second part included questions related to demographics of the respondents. The third part included question

items for the constructs in the research model. To assist the respondents in understanding the survey, the important definitions for the survey were also provided. Participation was by informed consent, by direct logging on to the study website and submitting responses.

4.4.3 Sampling Frame

Using convenience, opt-in Internet panels as sampling frames has become virtually commonplace in today's survey research world (Potoglou et al., 2012). The movement towards Web-based convenience panels is inevitable, given the relatively low cost of these samples, the shorter time frames for completing surveys and the flexibility provided by the Internet for conducting complex surveys (Fricker, 2008; Zhang, 2000). Some survey brokers recruit panels of individuals by using incentives and maintain database of several million volunteer Web survey participants. The volunteers are recruited from a variety of sources including advertising on the Internet.

In this study, a survey broker that provides opt-in online panels was used for distributing and collecting survey data. The researcher provided the survey broker with a target sample size. The researcher also specified the sampling selection criteria (i.e., executive management, middle management, and IT management) and obtained a written agreement from the survey broker to assure the representativeness of the survey samples. For example, to safeguard against multiple submissions, the survey broker was responsible for managing a login procedure to ensure that a given person's data was only used once. In addition, to identity and revise problematic questions and survey formatting, a pilot survey with a small group of participants was conducted before activating the survey. After the required sample size was reached, the survey broker provided a final report of completion rate data. Reporting a completion rate lends credibility to the survey, reflecting the quality of the recruitment procedures for participation in the survey (Callegaro et al., 2014).

4.5 Data Preparation

Data preparation involved checking the data for accuracy, entering the data, developing and documenting a database structure that integrates the various measures using standard statistical programs (i.e., SPSS & SmartPLS). First, the raw data were checked for data entry errors (e.g., the effectiveness of screening questions to determine whether the respondent is qualified). The Qualtrics web-based survey tools allowed the researcher to constantly access to the data and constantly monitor the performance of the application and the state of the collected data. Next, each response from a survey participant was checked for reasonableness. In the context of this thesis, checking for reasonableness principally was concerned with checking if the pattern of the response

could be considered reasonable and fit the majority of other responses (e.g., all or almost all questions answered with 'neutral' on the Likert-type 7-point scale). The comments provided by the respondents were also reviewed generally for data quality and specifically for sampling error (e.g., '*… not particularly relevant to very small scale business that has owner plus one other casual employee…'*). All of the responding organisations that were not involved in IT shared services were identified and removed from the data analysis. To ensure the integrity of the imported data a thorough comparison of randomly selected data in the SPSS and SmartPLS data files with the corresponding MS Excel® document was performed. However, no errors or inconsistencies in the electronic conversion of the data were found and therefore the data was suitable for the data analysis procedures.

4.5.1 Missing Data

To avoid missing data, several validation methods were used to develop the survey instrument in Qualtrics. For example, respondents were required to allocate 100 points to describe the proportion of decision made by each decision party. A validation rule was added in the survey design to ensure a certain number of responses are chosen, and that a total number of 100 are allocated across different decision parties. Requiring the respondents to answer every question was another way to eliminate missing data. Respondents were prompted for answers to questions they left blank. This survey was administered to members of an opt-in panel who might be accustomed to surveys that required answers, therefore, the breakoff rate of requiring answers was small (Couper et al., 2011). Due to these technical configurations, it was not necessary to check the responses for completeness as it was technically not possible to save incomplete responses; for this reason there was no need to handle missing data in this research work.

4.5.2 Data Transformation

After the raw data were checked for inaccuracies, data transformation was required to create a well-structured database suitable for analysis. The transformation involved categorisation, recoding, and computing new variables as specified in the operation definitions (Appendix B). The construct 'shared services delivery arrangement' was operationalised by the typology from the study of Tomkinson (2007, p.30). The variables in Question 3 were categorised accordingly. Based on Weill and Ross's classification (2004, p.60), the constructs 'IT governance structure (decision rights)' and 'IT governance structure (accountability)' were recoded and built on the variables in Question 4. The following table describes the computation methods of creating the constructs 'IT governance structural gap', 'monitoring mechanism' and 'business value'.

Table 4.11: Construct Operationalisation

Construct	Scale	Computation Methods
IT Governance Structural Gap	Structural gap Question 4	Summed absolute value of the difference between decision rights and accountability for each IT governance decision domain (Grover et al., 2007). Structural gap = Σn=1 to 5 | Decision rights – Accountability |
	Gap assessment Question 5	Mean of 3 items
Monitoring Mechanism	Independent review Question 6.1	Mean of 4 items
	Professional oversight Question 6.3	Mean of 8 items
	Joint working Question 6.2	Mean of 6 items
Business Value	Business value Q7.1 & Q7.2	The business value measure was created based on 10 items in each of questions 7.1 and 7.2. Question 7.1 assesses the importance of particular outcome and question 7.2 assesses second how well IT shared services contributed to meeting that outcome. Since not all organisations ranked the outcomes with the same importance, the answers to the first question were used to weight the answers to the second question (Weill & Ross, 2004). $\text{Business value} = \frac{\Sigma n=1 \text{ to } 10 \text{ (importance of business value [Q 7.1]*influence of IT shared services [Q7.2])}}{\Sigma n=1 \text{ to } 10 \text{ (importance of business value)}}$

4.6 Response Rate

Response rates, taking into account eligibility of units, are actually difficult or even impossible to calculate in Web surveys (Dillman, 2009). Completion rates reported in the literature thus vary from less than 1% to just a few percent for very general self-selected Web surveys (Schillewaert et al., 1998) to higher percentages, even as high as 78% in the case of telephone pre-recruited panels (Wiebe et al., 2001). As there appears to be no standard methodology for calculating a response rate in web-based surveys, the researcher avoided the term ‘response rate’ and used response metrics such as the click-through rate, incident rate and completion rate in reporting.

In this thesis, click-through rate was measured based on the visit statistics collected by the ISP hosting the web survey among all invited or exposed to invitations. Of the 5476 executives and middle managers exposed to invitations, some 927 viewed the survey and the click-through rate was 16.93%. Of these, 100 respondents dropped out. The incidence rate was measured based on the number of respondents that qualify for a study based on the screening criteria. Five hundred and eighty-five non-shared services providers or clients were screened out and the incident rate was 29.26%. The completion rate was measured based on the completed and valid questionnaires. 20 responses from single-person organisations and 17 incomplete responses were unable to be used. Thus, 205 useable responses were included for data analysis, resulting in a completion rate of 24.79%.

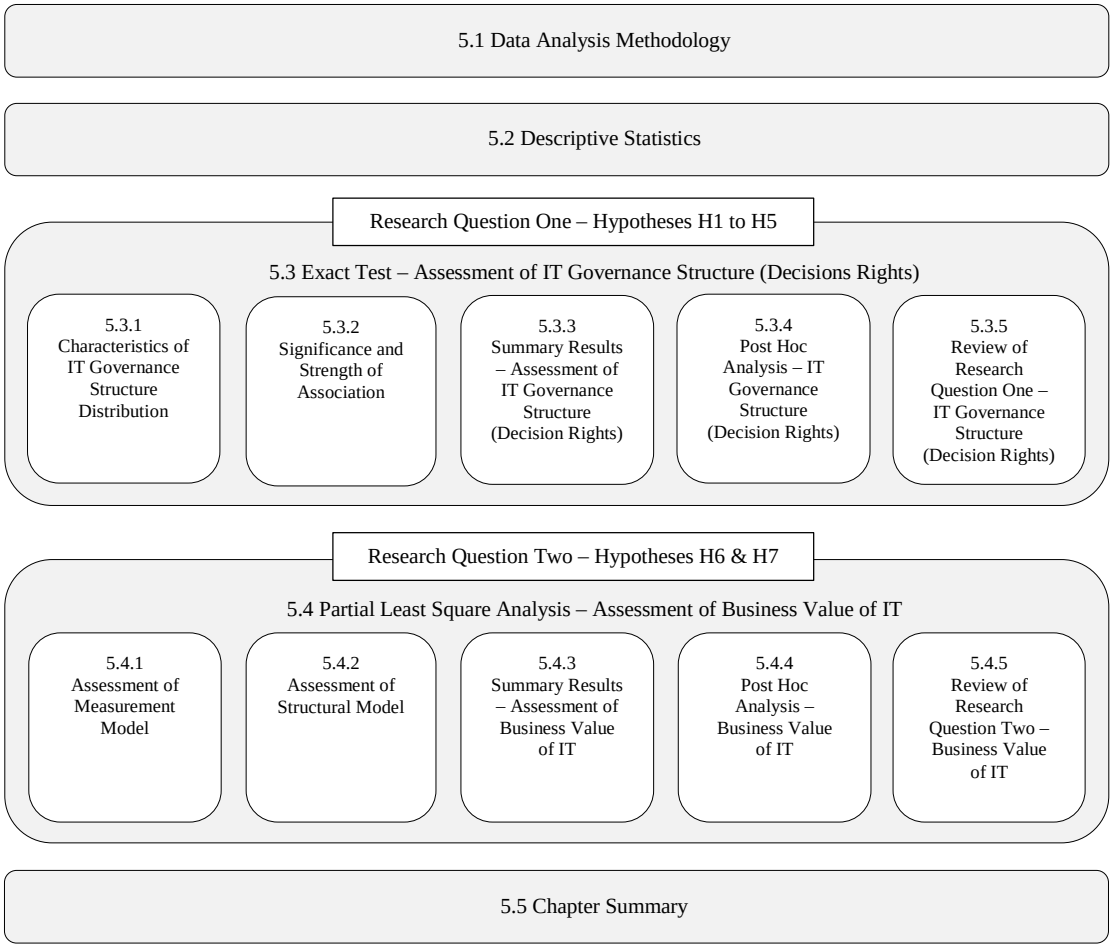
4.7 Chapter Summary

This chapter presented the overall research design adopted to obtain data to test the research model. A quantitative research methodology seems appropriate for use in this study. The research contains all the parameters needed for a quantitative design, including the fact that it is highly structured, and the results are determined numerically or statistically. Additionally, the variables are clearly defined; the researcher is working within objective parameters; and the phenomena to be captured, no matter how complex, can be deconstructed into smaller pieces, all of which are measurable. The survey research described will result in conclusions that will either prove or disprove the hypothesis accompanying it. Explanations about analysis strategy will be presented in next chapter.

CHAPTER 5: DATA ANALYSIS AND HYPOTHESIS TESTING

This chapter summarises the data analysis and results of the hypothesis testing. Building on the research goals of this study, section 5.1 introduces the selected statistical methodologies for data analysis. Section 5.2 provides the descriptive statistics of the collected data. Prior to formal hypotheses testing, section 5.3 examines the results of an Exact Test from the IT governance structure data set. Section 5.4 evaluates the results of Partial Least Squares test from the IT governance structural gap and monitoring mechanism data set in the research model. The measurement model is assessed to ensure validity and reliability in section 5.4.1. Only if the measurement model shows adequate levels of validity and reliability, can the interdependencies between the latent variables be used for interpretation. Subsequent to the analysis of the measurement model, the structural model is evaluated in section 5.4.2. Finally, section 5.5 concludes the findings. The structure of this chapter is shown in figure 5.1 below.

Figure 5.1: Chapter Structure



5.1 Data Analysis Methodology

As this study performs confirmatory procedures to test the developed hypotheses, the following statistical techniques were used:

1. Descriptive statistics were generated to describe the basic features of the data. Cross-tabulations and chi-squared tests were used to explore the significant differences between organisation size and shared services relationship.
2. The Exact Test technique was used to examine the frequency data set for each IT governance structure and shared services delivery arrangement pattern. The 'exact' p values revealed if there were non-random associations between these two categorical variables for each IT decision domain.
3. The Partial Least Squares (PLS) technique was used to confirm the proposed relationships among the IT governance structural gap, monitoring mechanism and business value of IT. Following Hulland's (1999) procedure, a two-phased approach was used for data analysis. First, the measurement model (called the outer model relating the manifest variables to their own latent variables) was estimated using confirmatory factor analysis (CFA) to test the overall fit of the model. Composite reliability, Cronbach's alpha and average variance extracted (AVE) values ensured that only reliable and valid measures of the constructs were used before drawing conclusions about the nature of the construct relationships. Second, the structural model (called the inner model relating some endogenous latent variables to other latent variables) was tested by estimating the paths between the constructs in the model. T-values and their statistical significance were assessed for that purpose, as indicators of the model's predictive ability.

5.2 Descriptive statistics

The research sample of 205 usable responses was examined to establish a picture about the complex nature of the data. In particular, two groups (shared services relationship and organisation size) were further compared to reveal the significant differences on the constructs in the theoretical model. Undertaking a review of shared services relationship ascertains whether gaps exist between provider and client expectations about the IT governance mechanisms and business value generated from IT shared services as a sourcing strategy. The discovery of gaps in the provider-client perceptions will indicate potential opportunities and challenges that need to be addressed by shared services organisations. Researchers consider organisation size as a contingency factor on organisation structure (i.e., form, decision making, and control) which then influences performance (e.g., Daft, 2013). For example, small organisations cannot develop all the desired services and have

all kinds of expertise, however, by sharing services and expertise among these organisations (i.e., iso-corporate), a larger number of services desired become available. A sound analysis of these manifest variables will provide an insight into the governance issues influencing the success of shared services implementations.

5.2.1 Demographics of Respondents

This research takes into account the different characteristics in the sample that may have potential effects on the relationships between variables. Table 5.1 presents the respondent profile. Survey participants are evenly divided between shared services providers and shared services clients (labelled as 'RELATIONSHIP'), with 46.8% (n = 96) working for the latter and 53.2% (n = 109) working for the former. Approximately 50.7% (n = 104) of the respondents are top management executives. The top management executives refer to the top two tiers of management, e.g., 'C' Level Executive (CEO, COO, CFO), Business Executives, Business Director, etc. The column-percentages (% within RELATIONSHIP) in the 'Top Management Executive' row indicate 54.0% (n = 59) are executives in providers and 46.9% (n = 45) are executives in clients. Comparing other column-percentages for the cells in each 'ROLE' row, only slight distribution pattern differences can be observed between provider and client. The respondent profile indicates that no significant difference is found between the two respondent groups.

Table 5.1: Respondent Profile

Respondent		**RELATIONSHIP**		
ROLE		IT Shared Services Provider	IT Shared Services Client	Total
Top Management Executive	Count	59	45	104
	% within RELATIONSHIP	54.10%	46.90%	50.70%
	% of Total	28.80%	22.00%	50.70%
Business Unit Leader	Count	23	26	49
	% within RELATIONSHIP	21.10%	27.10%	23.90%
	% of Total	11.20%	12.70%	23.90%
Local IT Unit Leader	Count	16	11	27
	% within RELATIONSHIP	14.70%	11.50%	13.20%
	% of Total	7.80%	5.40%	13.20%
IT Executive - Shared Services	Count	5	3	8
	% within RELATIONSHIP	4.60%	3.10%	3.90%
	% of Total	2.40%	1.50%	3.90%
Other	Count	6	11	17
	% within RELATIONSHIP	5.50%	11.50%	8.30%
	% of Total	2.90%	5.40%	8.30%
Total	Count	109	96	205
	% within RELATIONSHIP	100.00%	100.00%	100.00%
	% of Total	53.20%	46.80%	100.00%

The unit of analysis in this study is the organisation. The profile of respondent organisations consists of different dimensions: the number of people employed, industry types, and location. Table 5.2 presents the organisation profile. There is a wide range of participant organisations in terms of size. Nearly half of the respondents work for organisations employing less than 150 employees (47%), 28% of the respondents work for organisations with employees between 151 and

1,000, and almost one quarter respondents work for organisations employing more than 1,000 employees.

From the 17 industry sectors used in the Australian and New Zealand Standard Industrial Classification (ANZSIC), the respondents come from all sectors except electricity, gas and water supply. The survey results show that 14% of the respondents work in the personal or other services sector followed by 13% in the manufacturing industry. Retail is the next largest sector, with 10% of the respondents falling into this category. Eight per cent of those answering the survey work in the communication services, finance and insurance, and education field respectively. Seven per cent are employed by construction organisations and six per cent work in the government administration and defence sector. The remaining nine sectors in total have less than 5% of the respondents. Including those organisations who participated in the pilot test from the electricity, gas and water supply sector, this study confirms similar findings that IT shared services is an accepted organisational and strategic model across all industries (Deloitte, 2009, 2013). Four respondents manage locations in more than one country, for example, New Zealand and Canada. The number of responses, along with their industrial dispersion, personal and organisation profiles provides good variability within the sample.

Table 5.2: Organisation Profile

Organisation	Characteristic	Frequency	Percentage
Size	Under 150 employees	97	47.3%
	151 to 500 employees	30	14.6%
	501 to 1000 employees	27	13.2%
	1001 to 5000 employees	28	13.7%
	More than 5000 employees	23	11.2%
Type[5]	Agriculture, Forestry and Fishing	10	4.9%
	Mining	8	3.9%
	Manufacturing	26	12.7%
	Electricity, Gas and Water Supply	0	0.0%
	Construction	14	6.8%
	Wholesale Trade	6	2.9%
	Retail Trade	20	9.8%
	Accommodation, Cafes and Restaurants	8	3.9%
	Transport and Storage	3	1.5%
	Communication Services	17	8.3%
	Finance and Insurance	16	7.8%
	Property and Business Services	6	2.9%
	Government Administration and Defence	13	6.3%
	Education	17	8.3%
	Health and Community Services	8	3.9%
	Cultural and Recreational Services	4	2.0%
	Personal and Other Services	28	13.7%
	Missing	1	0.5%
Location	Australian Capital Territory	38	8.2%
	New South Wales	100	21.4%
	Victoria	86	18.4%
	Queensland	76	16.3%
	South Australia	55	11.8%
	Western Australia	55	11.8%
	Tasmania	28	6.0%
	Northern Territory	24	5.2%
	Overseas	4	0.9%

[5] The 2006 edition of the Australian and New Zealand Standard Industrial Classification (ANZSIC).

5.2.2 Comparison of Respondents

Every organisation approaches shared services differently (Deloitte, 2011). The assumption is that each group of respondents has specific business needs to deal with service provision and criteria to control performance. The research sample is split into two groups: large and small organisations. Although there are various criteria in the literature that could be used to define or measure the organisation size, organisations are most frequently classified by number of employees because this measure is more stable over time compared with other factors (Forsaith et al., 1995). However, there is considerable variation in the threshold figures selected as small or large organisations. For example, in the United States, the upper limit to define small business ranges from 100 to 500 employees. The Australian Bureau of Statistics defines small business as having fewer than 100 employees in the manufacturing sector and fewer than 20 in retail, wholesale, construction, and services sectors. Organisations with 100 to 199 employees are considered as medium, and 200 or more employees are classified as large (Australian Bureau of Statistics, 1999). To obtain an appropriate 50:50 small-large split, this study uses the number of employees as an index of organisation size and collapses medium organisations to both small organisations as having under 150 employees and large organisations as having more than 150 employees.

Cross-tabulation analysis together with the Chi-square (χ^2) test and the Fisher exact test (2-sided) were performed. Table 5.3 illustrates the range of different shared services delivery arrangements adopted in different organisation sizes. Table 5.4 reveals there is a positive significant association between organisation size and shared services delivery arrangement. The results indicate that the organisation size is related to the types of shared services delivery arrangement[6]. Table 5.3 shows the column-percentage of 'intra-service' for large organisations is 34.9% while it is 65.1% for small organisations. This table indicates that small organisations are more likely to adopt 'intra-service' delivery arrangement. The difference between large and small organisations is not significant in the 'service' column, at 48.0% and 52.0% respectively. In the 'corporate' delivery arrangement, however, there is a higher column-percentage of large organisations compared with small organisations (65.0% vs. 35.0%). In the 'supra-corporate' column, the numbers of large and

[6] Intra-service – collaboration on specific and/or specialist services. This limited shared services option could, at its most basic level, provide for services to gain goods and services centrally from a business unit, e.g., purchasing IT equipment; partnership for delivery a project; share an integrated software package.

Service – a degree of formality of sharing a complete service but the organisation is not changed to meet the challenge of the sharing. Generally, one business unit allows another to provide the service with a transfer of control and responsibility, e.g., all the budget belong to the 'shared' service business unit.

Corporate – two or more business units or organisations form a joint arrangement to 'share' a specific service or services at a mutually agreed standard in which both the costs and benefits are borne by all participating organisations on a negotiated basis, e.g., IT infrastructure services partnership as a new management group.

Supra-corporate – two or more participating organisations set up a separate special purpose vehicle to deliver a specified service or services on behalf of participating organisations.

Iso-corporate – an extension of the 'supra-corporate' model. The delivery organisation is allowed to provide services to external customers.

small organisations represent the same percentage, i.e., 50%. Small organisations account for 66.7% and large organisations account for 33.3% of total 'iso-corporate' delivery arrangement, indicating that small organisations are more likely to adopt an 'iso-corporate' delivery arrangement.

Table 5.3: Cross-Tabulation of Shared Services Delivery Arrangement (SSDA) and Organisation Size

			Shared Services Delivery Arrangement					
			Intra-service	**Service**	**Corporate**	**Supra-Corporate**	**Iso-Corporate**	**Total**
Size	Large	Count	15	12	65	11	5	108
		Expected Count	22.7	13.2	52.7	11.6	7.9	108.0
		% within SSDA	34.9%	48.0%	65.0%	50.0%	33.3%	52.7%
		% of Total	7.3%	5.9%	31.7%	5.4%	2.4%	52.7%
		Adjusted Residual	-2.6	-.5	3.4	-.3	-1.6	
	Small	Count	28	13	35	11	10	97
		Expected Count	20.3	11.8	47.3	10.4	7.1	97.0
		% within SSDA	65.1%	52.0%	35.0%	50.0%	66.7%	47.3%
		% of Total	13.7%	6.3%	17.1%	5.4%	4.9%	47.3%
		Adjusted Residual	2.6	.5	-3.4	.3	1.6	
	Total	Count	43	25	100	22	15	205
		Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
		% within SSDA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%

Table 5.4: Chi-Square Tests of Shared Services Delivery Arrangement (SSDA) and Organisation Size

				Asymp. Sig.	Monte Carlo Sig. (2-sided)		
						99% Confidence Interval	
		Value	df	(2-sided)	Sig.	Lower	Upper
Size	Pearson Chi-Square	14.087[a]	4	.007	.008[b]	.005	.010
	Likelihood Ratio	14.281	4	.006	.009[b]	.007	.011
	Fisher's Exact Test	14.084			.008[b]	.006	.010
	N of Valid Cases	205					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.10.

b. Based on 10000 sampled tables with starting seed 624387341.

To gain insight into the effects of shared services relationship (client vs provider) on shared service delivery arrangement, the cross-tabulation analysis was conducted as shown in Table 5.5. The Chi-square (χ^2) test and the Fisher exact test (2-sided) indicate differences between provider and client groups do not reach statistical significance for each shared services delivery arrangement (Table 5.6). The results indicate shared services relationship is not significantly related to delivery arrangement. The sample is, therefore, likely to provide a 'balanced' representation of both provider and client.

Table 5.5: Cross-Tabulation of Shared Services Delivery Arrangement (SSDA) and Relationship

			Shared Services Delivery Arrangement					
			Intra-service	**Service**	**Corporate**	**Supra-Corporate**	**Iso-Corporate**	**Total**
Relationship	Provider	Count	19	13	61	9	7	109
		Expected Count	22.9	13.3	53.2	11.7	8.0	109.0
		% within SSDA	44.2%	52.0%	61.0%	40.9%	46.7%	53.2%
		% of Total	9.3%	6.3%	29.8%	4.4%	3.4%	53.2%
		Adjusted Residual	-1.3	-.1	2.2	-1.2	-.5	
	Client	Count	24	12	39	13	8	96
		Expected Count	20.1	11.7	46.8	10.3	7.0	96.0
		% within SSDA	55.8%	48.0%	39.0%	59.1%	53.3%	46.8%
		% of Total	11.7%	5.9%	19.0%	6.3%	3.9%	46.8%
		Adjusted Residual	1.3	.1	-2.2	1.2	.5	
	Total	Count	43	25	100	22	15	205
		Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
		% within SSDA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%

Table 5.6: Chi-Square Tests of Shared Services Delivery Arrangement (SSDA) and Relationship

				Asymp. Sig.	Monte Carlo Sig. (2-sided)		
						99% Confidence Interval	
		Value	df	(2-sided)	Sig.	Lower	Upper
Relationship	Pearson Chi-Square	5.453[a]	4	.244	.246[b]	.235	.257
	Likelihood Ratio	5.476	4	.242	.253[b]	.242	.264
	Fisher's Exact Test	5.485			.241[b]	.230	.252
	N of Valid Cases	205					

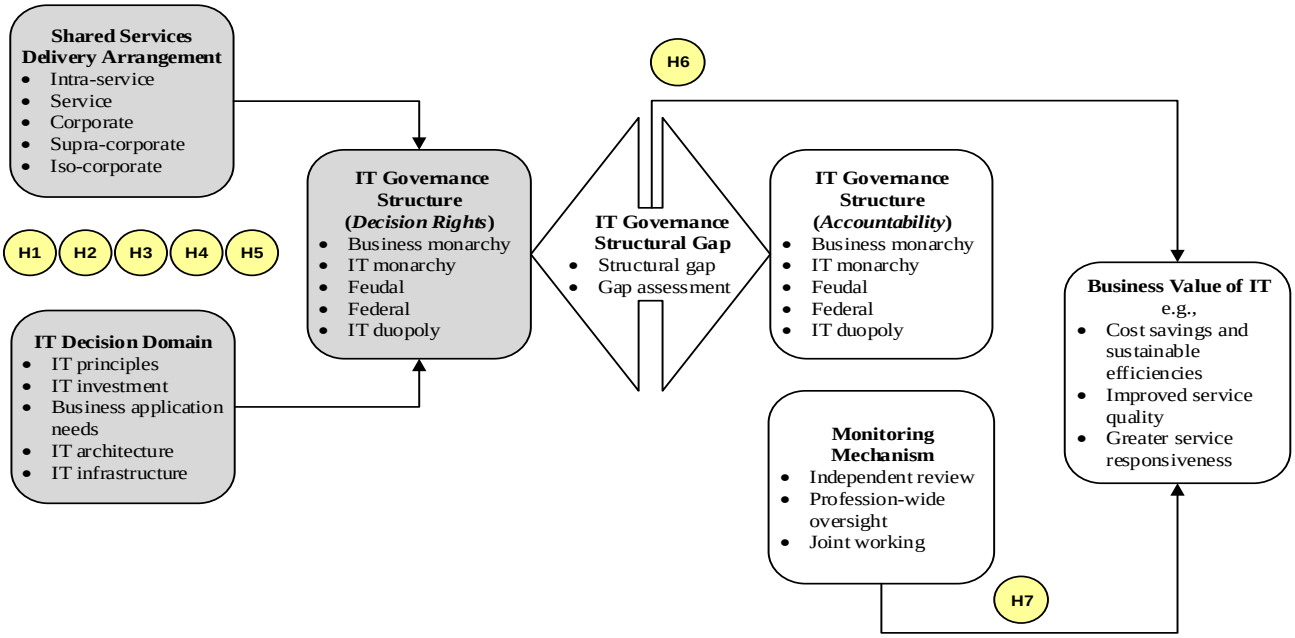
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.02.
b. Based on 10000 sampled tables with starting seed 624387341.

The descriptive statistics and cross-tabulation analysis of different groups (above) do not assess the explanatory power of the research model, and as such, are not able to answer the research questions. Instead, the descriptive analysis provides background information, which is useful for the understanding of the differences between organisation size and shared services relationship.

5.3 Exact Tests – Assessment of IT Governance Structure (Decision Rights)

To assess relationships, interdependency and significant differences between shared services delivery arrangement, IT decision domain and IT governance structure (decision rights) variables, the Exact Tests were used for analysis using SPSS to test the hypotheses of the first part of the research model as shaded in Figure 5.2, i.e., H1 to H5 (Bryman & Cramer, 2008). This test determines whether the proportions of those variables falling into each category differ by group, i.e., whether organisations govern IT differently, depending on the selected delivery arrangement. The unit of measurement is at the shared services delivery arrangement/IT decision domain level to conduct the analysis.

Figure 5.2: Assessment of Research Model – Part 1



5.3.1 Characteristics of IT Governance Structure Distribution

The boxplots show the distributional characteristics of each comparison group as well as the level of the scores (Figures 5.3 to 5.7). The horizontal line within each box represents the median; the lower and upper borders of each box represent the 25th and the 75th percentiles, respectively. As can be seen in the figures, most boxplots are comparatively tall. Overall, this finding suggests organisations hold quite different opinions about the design of IT governance structure, particularly in the subgroups (e.g., small organisation or client group). Most of the median lines are not equidistant and gravitating towards the bottom or the top edges, which suggests that the data are highly skewed distribution. General observations about the boxplots for each decision domain group indicate:

1. For IT principles, most of the consolidated boxplots are comparatively tall suggesting each shared services delivery arrangement has differences in the IT governance structure. The 'corporate' box plot has a relatively equal distribution suggesting organisations have a high level of similarity in their IT governance structure (Figure 5.3).
2. For IT investment, most of the medians are in the middle or nearer the lower quartile. All interquartile ranges are situated to the bottom of the range and the distribution departs from symmetry. This result suggests that organisations generally adopt a more centralised structure (Figure 5.4).
3. For business application needs, there are few outliers and extreme observations in the 'corporate' distribution. Most of the 'corporate' organisations again have similar views on their IT governance structure. Other shared services delivery arrangements are more variable in their IT governance structure choices (Figure 5.5).
4. For IT architecture, boxplots are uneven in size and outliers are found in 'corporate' shared services delivery arrangement. These observations show the 'corporate' organisations have very different distribution views of IT governance structure (Figure 5.6).
5. For IT infrastructure, the distributions are similar to IT investment and have wide ranges of IT governance structure choices in all the boxplots (Figure 5.7).

The boxplot is an important tool for exploratory data analysis. The result confirms that non-normality is evident in the data set, i.e., asymmetric with respect to the mean. This non-normality may exist due to the presence of outlier cases. Although in many cases outliers are seen as 'data problems' that must be 'fixed', outliers can also be of substantive interest and studied as unique phenomena that may lead to novel theoretical insights (Aguinis et al., 2013). A further investigation was conducted to examine if the outliers are 'error'. More specifically, "error outliners" include

outlying observations that are caused by not being part of the targeted population of interest (i.e., an error in the sampling procedure), lying outside the possible range of values, errors in observation, errors in recording, errors in preparing data, errors in computation, errors in coding, or errors in data manipulation (Orr et al., 1991).

The identified outliers are legitimate observations and more likely to be representative of the population as a whole. First, there is no evidence to show that the outliers are 'error outliers'. Second, these outliner cases may contain potentially valuable or unexpected knowledge (Mohrman & Edward E. Lawler, 2012). The relationship between shared service delivery arrangement and IT governance structure choice is relatively unexplored in academic literature. The outliers may be due to random variation and represent different opinions on allocating decision rights; therefore, they may have potential influence on the results. Third, nonparametric statistical methods are used for analysis which are robust in the presence of outliers (Rovai et al., 2013). The identified outliers are retained for further analysis.

The boxplots show that the organisations have large variability in IT governance structure. Apparently, 'business monarchy' and 'federal' are the most popular choices of IT governance structure.

Figure 5.3: Boxplots of IT Governance Structure and Shared Services Delivery Arrangement (SSDA) for IT principles

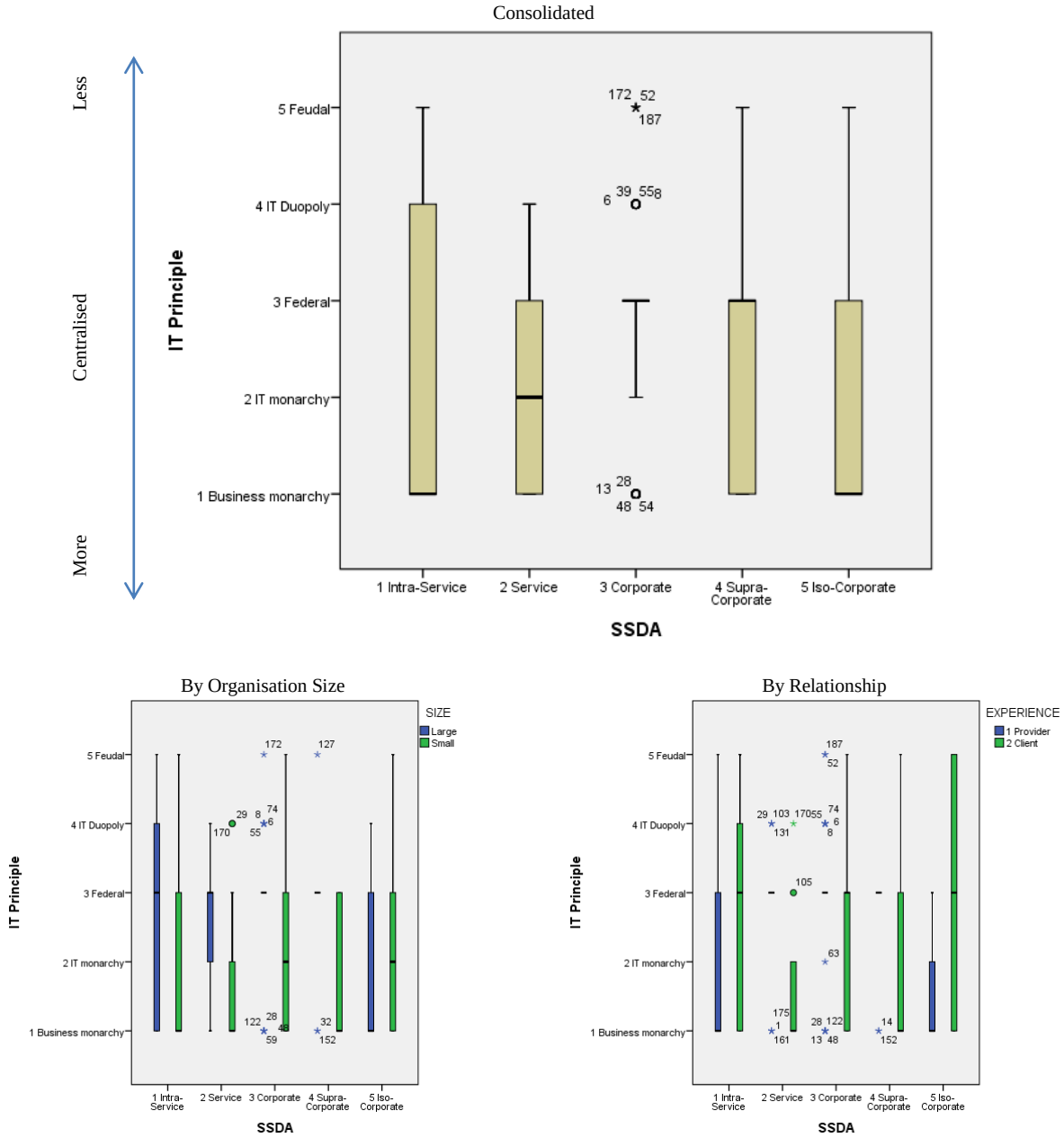


Figure 5.4: Boxplots of IT Governance Structure and Shared Services Delivery Arrangement (SSDA) for IT Investment

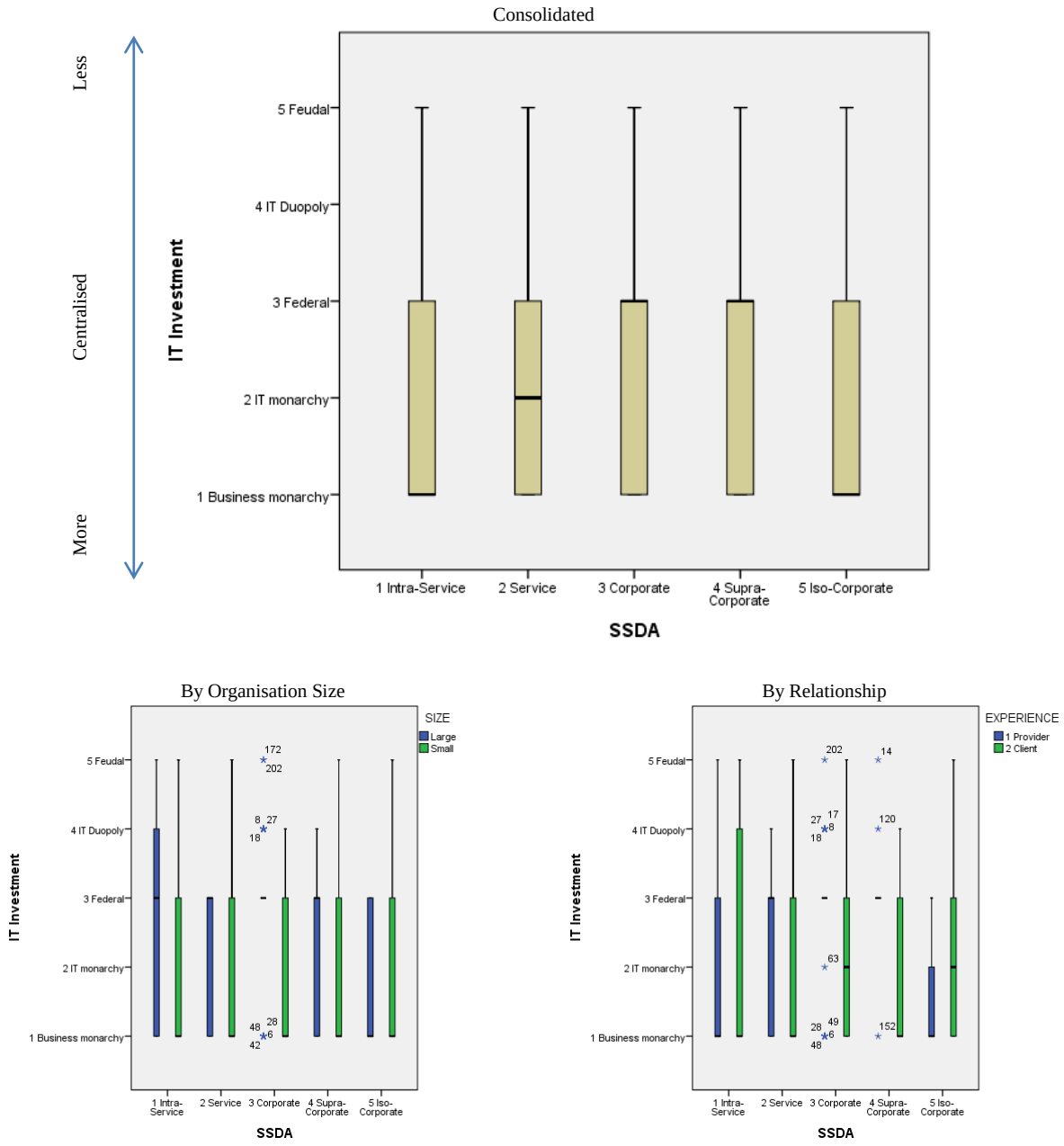


Figure 5.5: Boxplots of IT Governance Structure and Shared Services Delivery Arrangement (SSDA) for Business Application Needs

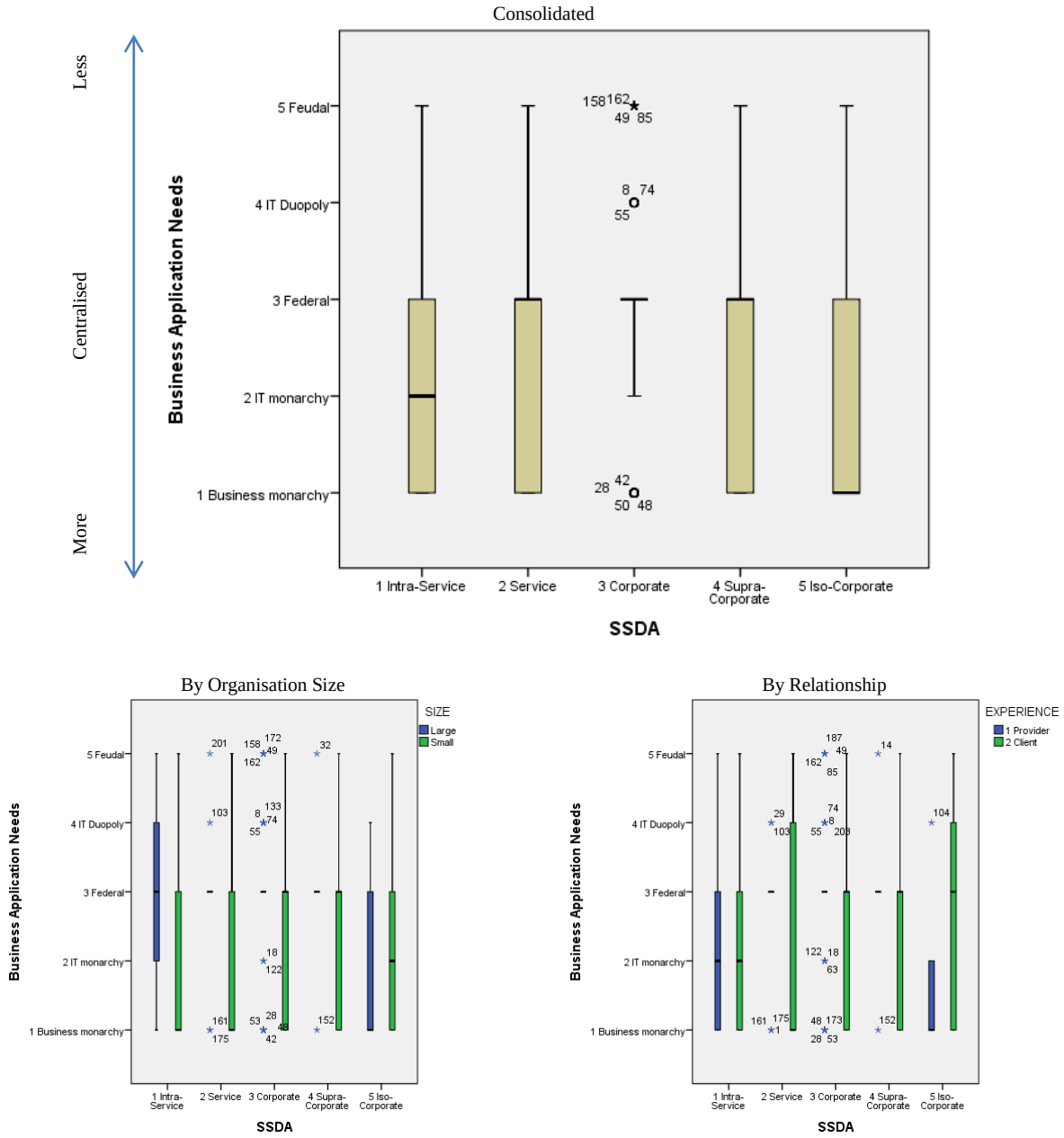
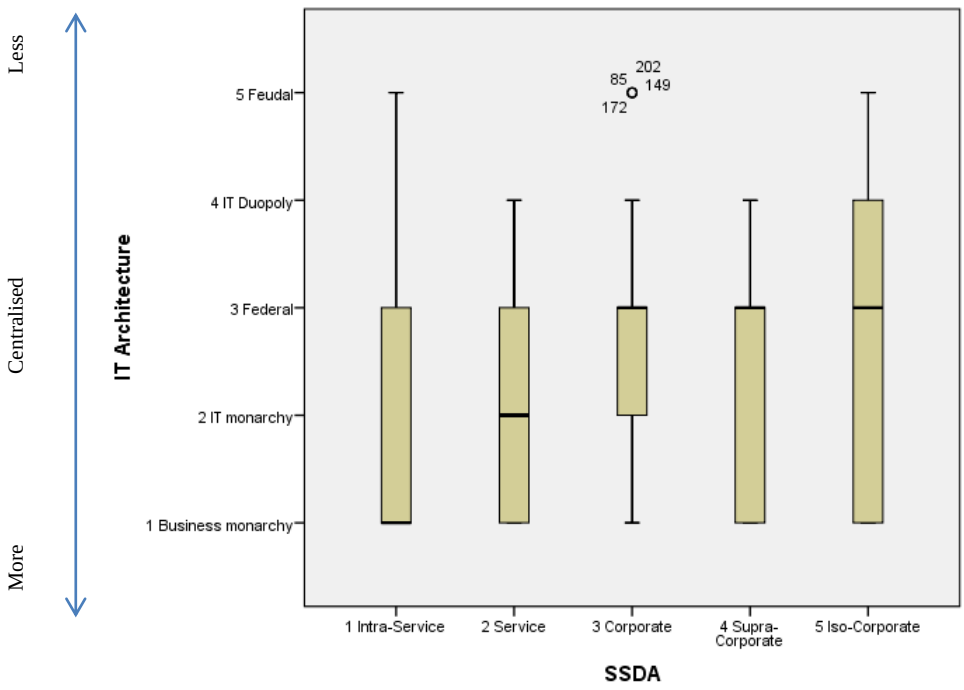
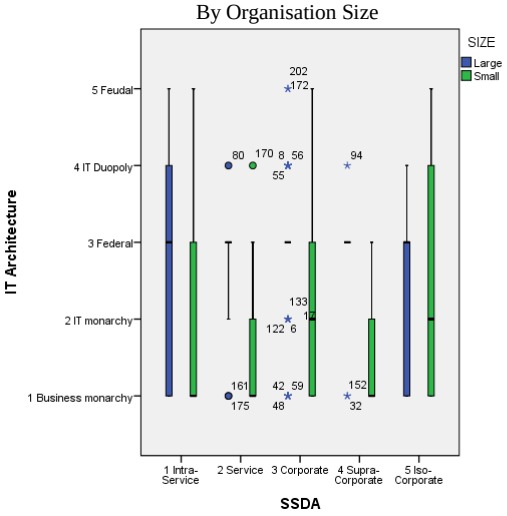


Figure 5.6: Boxplots of IT Governance Structure and Shared Services Delivery Arrangement (SSDA) for IT Architecture

Consolidated



By Organisation Size



By Relationship

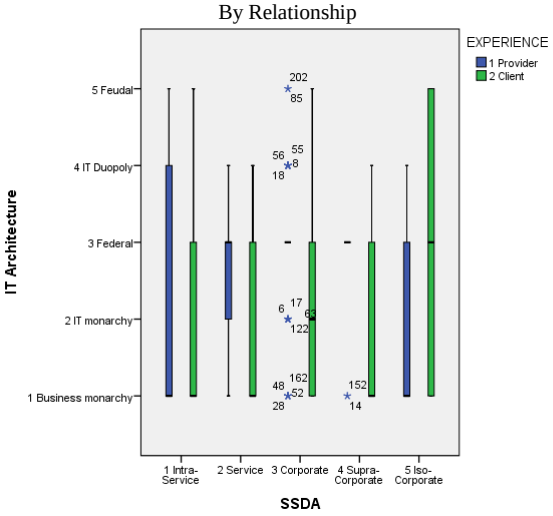
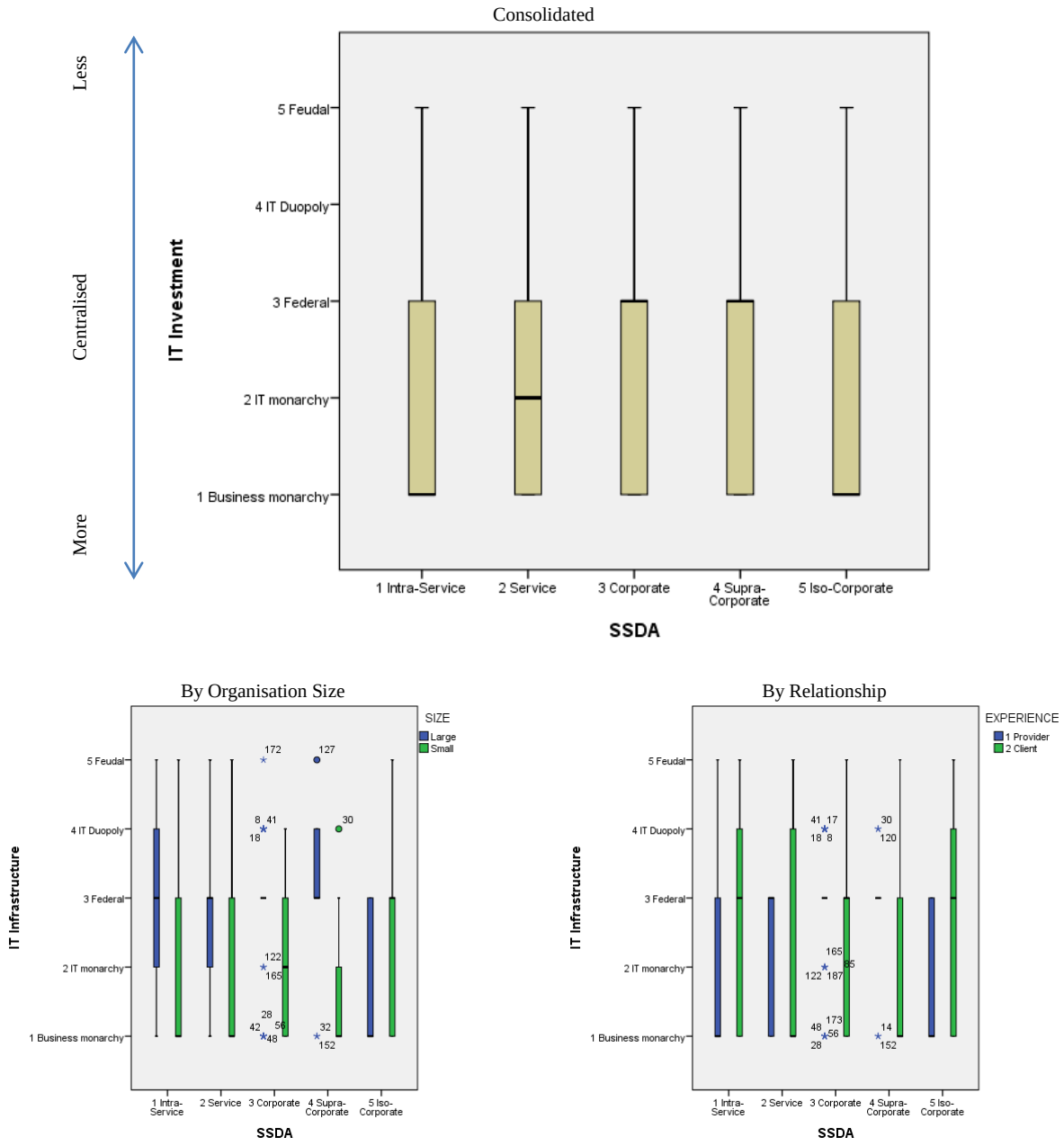


Figure 5.7: Boxplots of IT Governance Structure and Shared Services Delivery Arrangement (SSDA) for IT Infrastructure



5.3.2 Significance and Strength of Association

This section examines the statistical associations between shared services delivery arrangement, IT decision domain and IT governance structure (decision rights) variables. The next section, 5.3.3 will summarise the results of the hypothesis tests.

The Exact Tests provide two methods, the Exact and Monte Carlo methods, for calculating significance levels for the statistics available through the Cross-tabulations and Nonparametric Tests procedures. These methods provide powerful means for obtaining accurate results when the data set is small, the tables are sparse or unbalanced, the data are not normally distributed, or the data fail to meet any of the underlying assumptions necessary for reliable results using the standard asymptotic method (Mehta & Patel, 2011). The goal of using the Exact Tests is to enable this study to make reliable inferences because the data set, as shown in the above figures 5.3 to 5.7, is unbalanced.

The SPSS Exact Tests offer three tests for analysing unordered contingency tables. They are the Pearson chi-square test, the likelihood-ratio test, and Fisher's Exact Test. The Pearson chi-square statistic is a measure of the degree of independence of IT governance structure and shared services delivery arrangement, i.e., to test if there is a relationship between these two variables. The standard chi-square test is an asymptotic test. This means that given a sufficiently large sample size, the data are likely to conform reasonably closely to the expected chi-square distribution. As a result, the chi-square test is an approximation, albeit a reasonably good one most of the time. The likelihood-ratio test is an alternative to the Pearson chi-square test for testing independence of row and column classifications in an unordered contingency table. The Exact Method is also known as the Fisher's Exact Test. The test is exact because it uses the exact hypergeometric distribution rather than the approximate chi-square distribution to compute the p value.

When deciding to use a chi-square test, a significant assumption of 'minimum expected cell frequency' has to be taken into consideration. According to Pallant (2011), the minimum expected cell frequency should be 5 or greater (or at least 80% of cells have expected frequencies of 5 or more). If this assumption is violated, the outcomes of the chi-square test using asymptotic method may fail to produce reliable results (but not necessarily false). According to the SPSS output cross-tabulations (see Appendix D1 to D5), most cells have an expected count less than five. However, to test a very wide set of hypotheses, it is inappropriate to group either IT governance structure or shared services delivery arrangement categories to perform the standard chi-square test. Therefore, it is preferable to calculate a significance level based on the exact distribution of the test statistic (Agresti, 1992). In addition, Fisher's Exact Test is preferable to the likelihood ratio test for the small

sample, i.e., 205, obtained in the study. Hence, the likelihood ratio statistics are provided only for reference.

In this study, the differences between IT governance structure and shared services delivery arrangement for each IT decision domain should be examined by the Fisher's Exact Test statistics Fisher's Exact Test[7] considers all the possible cell combinations that would still result in the marginal frequencies and deems appropriate to confirm the research findings. Fisher (1970) advocated 5% significance as a standard level for concluding that there is evidence against the hypothesis tested. When the (two-sided) p value (the probability of obtaining the observed result) is less than the conventional 0.05, this study suggests that there is a significant relationship of the Fisher's Exact Test between the two classification factors. When a statistical significance is identified ($p < 0.05$), Cramer's V coefficient is evaluated as the effect size to describe the relative strength of the relationship. The value of Cramer's V varies from 0 to 1.

This study uses the value of 0.10 as the threshold to indicate a substantive difference between the variables (Dancey & Reidy, 2011). The results of the Cramer's V tests are evaluated according to the following criteria: < 0.10 = no relationship; 0.10 – < 0.15 = moderate association; 0.15 – < 0.25 = strong association; 0.25 – < 0.40 = very strong association; 0.40 – < 0.45 extremely strong relationship or the two variables are measuring the same concept; 0.45 – < 0.99 = two variables probably measuring the same concept, 1.00 = perfect relationship, independent variables will predict the dependent variable.

The cross-tabulations are then used to further investigate which specific IT governance structure versus delivery arrangement contributes to the overall differences between the two variables, i.e., what IT governance structure is likely adopted for each shared services delivery arrangement. The cross-tabulation tables are contained in Appendix D1 to D5. In the tables, the adjusted residuals in a cross-tabulation provide an estimation of the differences between observed and expected values (by assuming the distributions under comparisons are identical to each other). The IT governance structure versus shared services delivery arrangement cells with higher absolute values of adjusted residuals indicate that IT governance structures are more likely to be adopted in those shared services delivery arrangements corresponding to the positive cells, than the other ones. The summary findings for each IT decision domain are discussed in sections 5.3.2.1 through 5.3.2.5.

[7] This study utilises the Monte Carlo statistic. Monte Carlo enumeration algorithms provide an estimate of the exact p value called the Monte Carlo p value which can be made as accurate as necessary for the problem at hand. Typically, their accuracy is 99% of Fisher´s Exact Test. Monte Carlo estimates involve enumerating a random subset of all of the possible outcomes in the reference set. The random subset is large (default = 10,000) and can be set at any size. Increasing the size of the random subset will increase the accuracy of the Monte Carlo estimation. Thus, the Monte Carlo method provides a reliable, robust method of estimating the 'exact' p value without requiring exorbitant computer capacity (Mehta & Patel, 2011).

5.3.2.1 Cross-tabulation of IT principles

The summarised cross-tabulation of IT governance structure versus shared services delivery arrangement for IT principles decisions is shown in Table 5.7. In relation to the IT principles decision the highest frequency of each type of governance structure within each type of delivery arrangement is presented. For IT principles decision making within the 'intra-service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (51.2% i.e., n = 22/43). For IT principles decision making within the 'service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (48.0% i.e., n = 12/25). For IT principles decision making within the 'corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (58.0% i.e., n = 58/100). For IT principles decision making within the 'supra-corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (54.5% i.e., n = 12/22). For IT principles decision making within the 'iso-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (53.3% i.e., n = 8/15). This pattern shows that there is more focus on the use of 'business monarchy' in the 'intra-service', 'service' and 'iso-corporate' organisations. The 'federal' governance structure is more likely to be used in the 'corporate' and 'supra-corporate' organisations. The frequency distribution for each of the subgroup variables can be found in Appendix D1.

Table 5.7: Cross-tabulation – IT principles

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Federal
Large	Provider	n = 83	Significant relationship, Very strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
	Client	n = 25	Not significant relationship				
	Total	n = 108	Significant, Very strong relationship				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
Small	Provider	n = 26	Not significant relationship				
	Client	n = 71	Not significant relationship				
	Total	n = 97	Not significant relationship				
All	Provider	n = 109	Significant relationship, Very strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
	Client	n = 96	Not significant relationship				
	Total	n= 205	Significant relationship, Strong level of association				
			Business Monarchy*	Business Monarchy	Federal*	Federal	Business Monarchy
Result			Supported	Supported	Not Supported	Not Supported	Not Supported

*Adjusted residual values indicate deviations significant at the 0.05 level. Residual Analysis here is presented as a way of delving deeper into a Cross-tabulation. However, with Crosstabs of larger dimension, Residual Analysis will sometimes throw up interesting results along the lines of particular sub-categories that 'buck the trend' of the overall association between the variables. Alternatively, much higher values for residuals - whether +ve or -ve - may be taken as indicating those cells which make a particularly strong contribution to the relationship depicted in the table.

Table 5.8 provides the significance tests for IT principles cross-tabulation. The Fisher's Exact Test statistics of total sample (n = 205) is 34.480 with p value = 0.001. Thus, there are significant associations between IT governance structure and shared services delivery arrangement in these

table variables (i.e. statistically significant differences exist between the five IT governance structures and the five delivery arrangements). In other words, the pattern of responses (i.e. the proportion of those organisations that adopt 'business monarchy', 'IT monarchy', 'federal', 'IT duopoly' & 'feudal') in the five delivery arrangements is significantly different.

This study also examines whether or not there is an association between IT governance structure and shared services delivery arrangement implemented by separate groups. The Fisher's Exact Test statistics show that there are statistically significant associations in the 'large-provider' group (n = 83, Fisher's Exact value = 25.589, p = 0.003), 'large-total' group (n = 108, Fisher's Exact value = 24.202, p = 0.005), and 'total-provider' group (n = 109, Fisher's Exact value = 33.535, p = 0.001). The Fisher's Exact Test statistics for other groups are not significant at the 0.05 level.

Table 5.8: Chi-Square Tests – IT principles

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	Likelihood Ratio	24.549	12	.017	.007	.005	.010
	n = 83	Fisher's Exact Test	25.589			.003	.002	.005
	Client	Likelihood Ratio	11.226	12	.510	.596	.584	.609
	n = 25	Fisher's Exact Test	12.679			.467	.455	.480
	Total	Likelihood Ratio	23.769	12	.022	.023	.019	.027
	n = 108	Fisher's Exact Test	24.202			.005	.003	.006
Small	Provider	Likelihood Ratio	16.281	16	.434	.517	.504	.530
	n = 26	Fisher's Exact Test	15.398			.470	.457	.483
	Client	Likelihood Ratio	21.861	16	.148	.244	.233	.255
	n = 71	Fisher's Exact Test	14.709			.419	.407	.432
	Total	Likelihood Ratio	19.268	16	.255	.412	.399	.425
	n = 97	Fisher's Exact Test	12.595			.645	.633	.657
Total	Provider	Likelihood Ratio	36.186	16	.003	.001	.000	.002
	n = 109	Fisher's Exact Test	33.535			.001	.000	.001
	Client	Likelihood Ratio	20.796	16	.187	.268	.256	.279
	n = 96	Fisher's Exact Test	16.538			.287	.275	.298
	Total	Likelihood Ratio	39.099	16	.001	.001	.000	.001
	n = 205	Fisher's Exact Test	34.480			.001	.000	.001

The statistics in Table 5.9 provides a measure of the strength of association between the variables. The Cramer's V test statistic of total sample indicates that the association between IT governance structure and shared services delivery arrangement is a strong one (n = 205, Cramer's V value = 0.203, p = 0.007). The highly significant Cramer's V values for the 'large-provider' group (n = 83, Cramer's V value = 0.339, p = 0.020), 'large-total' group (n = 108, Cramer's V value = 0.268, p = 0.036), and 'total provider' group (n = 109, Cramer's V value = 0.279, p = 0.017) indicate that there are very strong relationships between the two variables.

Table 5.9: Symmetric Measures – IT principles

Size	Relationship			Value	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	n = 83	Cramer's V	.339	.004	.020	.017	.024
	Client	n = 25	Cramer's V	.410	.397	.423	.410	.436
	Total	n = 108	Cramer's V	.268	.025	.036	.031	.040
Small	Provider	n = 26	Cramer's V	.368	.592	.674	.662	.686
	Client	n = 71	Cramer's V	.254	.309	.309	.297	.321
	Total	n = 97	Cramer's V	.196	.534	.552	.539	.565
Total	Provider	n = 109	Cramer's V	.279	.006	.017	.013	.020
	Client	n = 96	Cramer's V	.217	.324	.321	.309	.333
	Total	n = 205	Cramer's V	.203	.006	.007	.005	.009

5.3.2.2 Cross-tabulation of IT Investment

For allocating IT investment responsibility, the summarised cross-tabulation of IT governance structure versus shared services delivery arrangement is shown in Table 5.10. For IT investment decision making within the 'intra-service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (58.1% i.e., n = 25/43). For IT investment decision making within the 'service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (48.0% i.e., n = 12/25). For IT investment decision making within the 'corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (50.0% i.e., n = 50/100). For IT investment decision making within the 'supra-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (45.5% i.e., n = 10/22). For IT investment decision making within the 'iso-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (60.0% i.e., n = 9/15). The frequency distribution for each of the subgroup variables can be found in Appendix D2.

Table 5.10: Cross-tabulation – IT Investment

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Business Monarchy	Business Monarchy	Business Monarchy	Federal	Federal
Large	Provider	n = 83	Not significant relationship				
	Client	n = 25	Not significant relationship				
	Total	n = 108	Not significant relationship				
Small	Provider	n = 26	Not significant relationship				
	Client	n = 71	Not significant relationship				
	Total	n = 97	Not significant relationship				
All	Provider	n = 109	Significant relationship, strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
	Client	n = 96	Not significant relationship				
	Total	n = 205	Significant relationship, strong level of association				
			Business Monarchy*	Business Monarchy	Federal*	Business Monarchy	Business Monarchy
Result			Supported	Supported	Not Supported	Not Supported	Not Supported

*Adjusted residual values indicate deviations significant at the 0.05 level. Residual Analysis here is presented as a way of delving deeper into a Cross-tabulation. However, with Crosstabs of larger dimension, Residual Analysis will sometimes throw up interesting results along the lines of particular sub-categories that 'buck the trend' of the overall association between the variables. Alternatively, much higher values for residuals - whether +ve or -ve - may be taken as indicating those cells which make a particularly strong contribution to the relationship depicted in the table.

Table 5.11 provides the significance tests for IT investment cross-tabulation. The Fisher's Exact Test statistics of total sample (n=205) is 24.376 with p value = 0.033. Thus, there are significant associations between IT governance structure and shared services delivery arrangement in these table variables (i.e. statistically significant differences exist between the five IT governance structures and the five delivery arrangements). In other words, the pattern of responses (i.e. the proportion of those organisations that adopt 'business monarchy', 'IT monarchy', 'federal', 'IT duopoly' & 'feudal') in the five delivery arrangements is significantly different.

This study also examines whether or not there is an association between IT governance structure and shared services delivery arrangement implemented by separate groups. The Fisher's Exact Test statistics show that there are statistically significant associations of the 'small-provider'

group (n = 26, Fisher's Exact value = 23.988, p = 0.020) and the 'provider-total' group (n = 109, Fisher's Exact value = 29.405, p = 0.004). The Fisher's Exact Test statistics for other groups are not significant at the 0.05 level.

Table 5.11: Chi-Square Tests – IT Investment

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	Likelihood Ratio	17.325	12	.138	.146	.137	.155
	n = 83	Fisher's Exact Test	16.364			.098	.090	.105
	Client	Likelihood Ratio	12.290	12	.423	.400	.388	.413
	n = 25	Fisher's Exact Test	14.349			.334	.322	.346
	Total	Likelihood Ratio	18.631	12	.098	.118	.110	.127
	n = 108	Fisher's Exact Test	16.166			.112	.103	.120
Small	Provider	Likelihood Ratio	23.189	16	.109	.025	.021	.028
	n = 26	Fisher's Exact Test	23.988			.020	.016	.023
	Client	Likelihood Ratio	15.039	16	.522	.717	.705	.728
	n = 71	Fisher's Exact Test	11.627			.781	.770	.792
	Total	Likelihood Ratio	17.844	16	.333	.490	.477	.503
	n = 97	Fisher's Exact Test	13.571			.536	.523	.548
Total	Provider	Likelihood Ratio	28.774	16	.026	.011	.008	.013
	n = 109	Fisher's Exact Test	29.405			.004	.002	.005
	Client	Likelihood Ratio	11.588	16	.772	.887	.878	.895
	n = 96	Fisher's Exact Test	10.195			.874	.866	.883
	Total	Likelihood Ratio	26.901	16	.043	.051	.045	.056
	n = 205	Fisher's Exact Test	24.376			.033	.029	.038

The statistics in Table 5.12 provides a measure of the strength of association between the variables. The Cramer's V test statistic of total sample indicates that the relationship between IT governance structure and shared services delivery arrangement is a strong one (n = 205, Cramer's V value = 0.169, p = 0.106). The high significant Cramer's V value for the 'provider-total' group (n = 108, Cramer's V value = 0.255, p = 0.046) indicates that there is a very strong relationship between the two variables. Although the Fisher's Exact Test of the 'small-provider' group is significant at the 0.05 level, its strength of association (Cramer's V values = 0.520) is redundant. This result implies that two variables are likely measuring the same concept. Hence, the relationship between the two variables in the 'small-provider' group should be considered as not significant.

Table 5.12: Symmetric Measures – IT Investment

Size	Relationship			Value	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	n = 83	Cramer's V	.265	.131	.145	.136	.154
	Client	n = 25	Cramer's V	.362	.633	.602	.589	.615
	Total	n = 108	Cramer's V	.221	.199	.203	.193	.213
Small	Provider	n = 26	Cramer's V	.520	.030	.054	.048	.060
	Client	n = 71	Cramer's V	.201	.777	.832	.823	.842
	Total	n = 97	Cramer's V	.183	.673	.698	.686	.710
Total	Provider	n = 109	Cramer's V	.255	.028	.046	.041	.052
	Client	n = 96	Cramer's V	.163	.857	.888	.880	.896
	Total	n = 205	Cramer's V	.169	.100	.106	.098	.114

5.3.2.3 Cross-tabulation of Business Application Needs

The summarised cross-tabulation of IT governance structure versus shared services delivery arrangement for business application needs decisions is shown in Table 5.13. For business application needs decision making within the 'intra-service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (48.8% i.e., n = 21/43). For business application needs decision making within the 'service' delivery arrangement the most

commonly adopted governance structure is 'business monarchy' (40.0% i.e., n = 10/25). For business application needs decision making within the 'corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (60.0% i.e., n = 60/100). For business application needs decision making within the 'supra-corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (59.1% i.e., n = 13/22). For business application needs decision making within the 'iso-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (53.3% i.e., n = 8/15). The frequency distribution for each of the subgroup variables can be found in Appendix D3.

Table 5.13: Cross-tabulation – Business Application Needs

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Business Monarchy	Business Monarchy	Federal	Federal	Federal
Large	Provider	n = 83	Not significant relationship				
	Client	n = 25	Not significant relationship				
	Total	n = 108	Not significant relationship				
Small	Provider	n = 26	Not significant relationship				
	Client	n = 71	Not significant relationship				
	Total	n = 97	Not significant relationship				
All	Provider	n = 109	Significant relationship, Very strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
	Client	n = 96	Not significant relationship				
	Total	n = 205	Significant relationship, Strong level of association				
			Business Monarchy*	Business Monarchy	Federal*	Federal	Business Monarchy
Result			Supported	Supported	Supported	Supported	Not Supported

*Adjusted residual values indicate deviations significant at the 0.05 level. Residual Analysis here is presented as a way of delving deeper into a Cross-tabulation. However, with Crosstabs of larger dimension, Residual Analysis will sometimes throw up interesting results along the lines of particular sub-categories that 'buck the trend' of the overall association between the variables. Alternatively, much higher values for residuals - whether +ve or -ve - may be taken as indicating those cells which make a particularly strong contribution to the relationship depicted in the table.

Table 5.14 provides the significance tests for business application needs cross-tabulation. The Fisher's Exact Test statistics of total sample (n = 205) is 27.282 with p value = 0.015. Thus, there are significant associations between IT governance structure and shared services delivery arrangement in these table variables (i.e. statistically significant differences exist between the five delivery arrangements and the five IT governance structures). In other words, the pattern of responses (i.e. the proportion of those organisations that adopt 'business monarchy', 'IT monarchy', 'federal', 'IT duopoly' & 'feudal') in the five delivery arrangements is significantly different.

This study also examines whether or not there is an association between IT governance structure and shared services delivery arrangement implemented by separate groups. The Fisher's Exact Test statistics show that there are statistically significant associations in the 'small-provider' group (n = 26, Fisher's Exact value = 24.107, p = 0.008 and the 'total provider' group (n = 109, Fisher's Exact value = 33.813, p < 0.001). The Fisher's Exact Test statistics for other groups are not significant at the 0.05 level.

Table 5.14: Chi-Square Tests – Business Application Needs

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	Likelihood Ratio	23.412	16	.103	.076	.069	.082
	n = 83	Fisher's Exact Test	21.870			.051	.045	.056
	Client	Likelihood Ratio	9.740	12	.639	.758	.747	.769
	n = 25	Fisher's Exact Test	10.606			.760	.749	.771
	Total	Likelihood Ratio	18.433	16	.299	.363	.351	.375
	n = 108	Fisher's Exact Test	18.228			.172	.163	.182
Small	Provider	Likelihood Ratio	26.763	16	.044	.015	.012	.018
	n = 26	Fisher's Exact Test	24.107			.008	.006	.010
	Client	Likelihood Ratio	20.180	16	.212	.334	.322	.346
	n = 71	Fisher's Exact Test	14.733			.417	.404	.429
	Total	Likelihood Ratio	17.301	16	.366	.539	.526	.552
	n = 97	Fisher's Exact Test	14.887			.408	.395	.420
Total	Provider	Likelihood Ratio	38.491	16	.001	.001	.000	.001
	n = 109	Fisher's Exact Test	33.813			.000	.000	.001
	Client	Likelihood Ratio	19.381	16	.249	.353	.341	.366
	n = 96	Fisher's Exact Test	15.632			.350	.338	.363
	Total	Likelihood Ratio	28.067	16	.031	.051	.046	.057
	n = 205	Fisher's Exact Test	27.282			.015	.012	.018

The statistics in Table 5.15 provide a measure of the strength of association between the variables. The Cramer's V value of total sample indicates that the relationship between IT governance structure and shared services delivery arrangement is a strong one (n = 205, Cramer's V value = 0.181, p = 0.045). The high significant Cramer's V value for the 'total-provider' group indicates that there is very strong relationship between the two variables (n = 109, Cramer's V value = 0.282, p = 0.008). Although the Fisher's Exact Test of the 'small-provider' group is significant at the 0.05 level, its strength of association (Cramer's V values = 0.543) is redundant. The two variables are likely measuring the same concept. Hence, the relationship between the two variables in the 'small-provider' group should be considered as not significant.

Table 5.15: Symmetric Measures – Business Application Needs

Size	Relationship			Value	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	n = 83	Cramer's V	.274	.070	.095	.087	.102
	Client	n = 25	Cramer's V	.355	.666	.701	.690	.713
	Total	n = 108	Cramer's V	.210	.268	.268	.256	.279
Small	Provider	n = 26	Cramer's V	.543	.015	.015	.012	.018
	Client	n = 71	Cramer's V	.234	.483	.496	.483	.509
	Total	n = 97	Cramer's V	.192	.571	.577	.564	.589
Total	Provider	n = 109	Cramer's V	.282	.004	.008	.006	.010
	Client	n = 96	Cramer's V	.200	.495	.494	.481	.506
	Total	n = 205	Cramer's V	.181	.044	.045	.040	.050

5.3.2.4 Cross-tabulation of IT Architecture

For allocating IT architecture responsibility, the summarised cross-tabulation of IT governance structure versus shared services delivery arrangement is shown in Table 5.16. For IT architecture decision making within the 'intra-service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (53.5% i.e., n = 23/43). For IT architecture decision making within the 'service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (40.0% i.e., n = 10/25). For IT architecture decision making within the 'corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (50.0% i.e., n = 50/100). For IT architecture decision making within the 'supra-corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (50.0% i.e., n = 11/22).

For IT architecture decision making within the 'iso-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (46.7% i.e., n = 7/15). The frequency distribution for each of the subgroup variables can be found in Appendix D4.

Table 5.16: Cross-tabulation – IT Architecture

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Feudal	IT Duopoly	IT Duopoly	IT Monarchy	IT Monarchy
Large	Provider	n = 83	Not significant relationship				
	Client	n = 25	Not significant relationship				
	Total	n = 108	Not significant relationship				
Small	Provider	n = 26	Not significant relationship				
	Client	n = 71	Not significant relationship				
	Total	n = 97	Not significant relationship				
All	Provider	n = 109	Significant relationship, Very strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*
	Client	n = 96	Not significant relationship				
	Total	n = 205	Significant relationship, Strong level of association				
			Business Monarchy*	Business Monarchy	Federal*	Federal	Business Monarchy
Result			Not Supported	Not Supported	Not Supported	Not Supported	Not Supported

*Adjusted residual values indicate deviations significant at the 0.05 level. Residual Analysis here is presented as a way of delving deeper into a Cross-tabulation. However, with Crosstab of larger dimension, Residual Analysis will sometimes throw up interesting results along the lines of particular sub-categories that 'buck the trend' of the overall association between the variables. Alternatively, much higher values for residuals - whether +ve or -ve - may e taken as indicating those cells which make a particularly strong contribution to the relationship depicted in the table.

Table 5.17 provides the significance tests for IT architecture cross-tabulation. The Fisher's Exact Test statistics of total sample (n = 205) is 26.080 with p value = 0.023. Thus, there are significant associations between IT governance structure and shared services delivery arrangement in these table variables (i.e. statistically significant differences exist between the five IT governance structures and the five delivery arrangements). In other words, the pattern of responses (i.e. the proportion of those organisations that adopt 'business monarchy', 'IT monarchy', 'federal', 'IT duopoly' & 'feudal') in the five delivery arrangements is significantly different.

This study also examines whether or not there is an association between IT governance structure and shared services delivery arrangement implemented by separate groups. The Fisher's Exact Test statistics show that there is statistically significant association of the 'total-provider' group (n = 109, Fisher's Exact value = 29.913, p = 0.003). However, the Fisher's Exact Test statistics for other groups are not significant at the 0.05 level.

Table 5.17: Chi-Square Tests – IT Architecture

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	Likelihood Ratio	19.522	16	.243	.275	.263	.286
	n = 83	Fisher's Exact Test	18.724			.151	.141	.160
	Client	Likelihood Ratio	11.122	16	.802	.791	.780	.801
	n = 25	Fisher's Exact Test	18.115			.637	.625	.650
	Total	Likelihood Ratio	18.728	16	.283	.360	.347	.372
	n = 108	Fisher's Exact Test	18.048			.182	.172	.192
Small	Provider	Likelihood Ratio	19.831	16	.228	.201	.191	.212
	n = 26	Fisher's Exact Test	19.341			.152	.142	.161
	Client	Likelihood Ratio	17.875	16	.331	.505	.492	.518
	n = 71	Fisher's Exact Test	13.147			.565	.552	.577
	Total	Likelihood Ratio	15.025	16	.523	.725	.714	.737
	n = 97	Fisher's Exact Test	10.351			.841	.832	.851
Total	Provider	Likelihood Ratio	34.852	16	.004	.004	.002	.006
	n = 109	Fisher's Exact Test	29.913			.003	.002	.005
	Client	Likelihood Ratio	14.450	16	.565	.751	.740	.762
	n = 96	Fisher's Exact Test	11.162			.773	.762	.783
	Total	Likelihood Ratio	32.254	16	.009	.016	.012	.019

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
	n = 205	Fisher's Exact Test	26.080			.023	.019	.027

The statistics in Table 5.18 provide a measure of the strength of association between the variables. The Cramer's V value of total sample indicates that the relationship between IT governance structure and shared services delivery arrangement is a strong one (n = 205, Cramer's V value = 0.184, p = 0.033). The high significant Cramer's V value for the 'total-provider' group indicates that there is very strong relationship between the two variables (n = 109, Cramer's V value = 0.264, p = 0.020).

Table 5.18: Symmetric Measures – IT Architecture

Size	Relationship			Value	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	n = 83	Cramer's V	.241	.254	.264	.253	.275
	Client	n = 25	Cramer's V	.344	.757	.688	.676	.700
	Total	n = 108	Cramer's V	.200	.367	.359	.346	.371
Small	Provider	n = 26	Cramer's V	.404	.388	.428	.415	.440
	Client	n = 71	Cramer's V	.253	.315	.315	.303	.327
	Total	n = 97	Cramer's V	.181	.694	.718	.706	.729
Total	Provider	n = 109	Cramer's V	.264	.016	.020	.016	.024
	Client	n = 96	Cramer's V	.196	.538	.548	.536	.561
	Total	n = 205	Cramer's V	.184	.034	.033	.028	.037

5.3.2.5 Cross-tabulation of IT Infrastructure

The summarised cross-tabulation of IT governance structure versus shared services delivery arrangement for business application needs decisions is shown in Table 5.19. For IT infrastructure decision making within the 'intra-service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (48.8% i.e., n = 21/43). For IT infrastructure decision making within the 'service' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (44.0% i.e., n = 11/25). For IT infrastructure decision making within the 'corporate' delivery arrangement the most commonly adopted governance structure is 'federal' (54.0% i.e., n = 54/100). For IT infrastructure decision making within the 'supra-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (45.5% i.e., n = 10/22). For IT infrastructure decision making within the 'iso-corporate' delivery arrangement the most commonly adopted governance structure is 'business monarchy' (46.7% i.e., n = 7/15). The frequency distribution for each of the subgroup variables can be found in Appendix D5.

Table 5.19: Cross-tabulation – IT Infrastructure

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Feudal	IT Duopoly	IT Monarchy	IT Monarchy	IT Monarchy
Large	Provider	n = 83	Not significant relationship				
	Client	n = 25	Not significant relationship				
	Total	n = 108	Not significant relationship				
Small	Provider	n = 26	Not significant relationship				
	Client	n = 71	Not significant relationship				
	Total	n = 97	Not significant relationship				
All	Provider	n = 109	Significant relationship, Very strong level of association				
			Business Monarchy*	Federal	Federal*	Federal	Business Monarchy*

Size	Relationship	Cases	Intra-service	Service	Corporate	Supra-corporate	Iso-corporate
			n = 43	n = 25	n = 100	n = 22	n = 15
Hypothesis			Feudal	IT Duopoly	IT Monarchy	IT Monarchy	IT Monarchy
	Client	n = 96	Not significant relationship				
	Total	n = 205	Significant relationship, Strong level of association				
			Business Monarchy*	Business Monarchy	Federal*	Business Monarchy	Business Monarchy
Result			Not Supported	Not Supported	Not Supported	Not Supported	Not Supported

*Adjusted residual values indicate deviations significant at the 0.05 level. Residual Analysis here is presented as a way of delving deeper into a Cross-tabulation. However, with Crosstabs of larger dimension, Residual Analysis will sometimes throw up interesting results along the lines of particular sub-categories that 'buck the trend' of the overall association between the variables. Alternatively, much higher values for residuals - whether +ve or -ve - may be taken as indicating those cells which make a particularly strong contribution to the relationship depicted in the Table.

Table 5.20 provides the significance tests for IT infrastructure cross-tabulation. The Fisher's Exact Test statistics of total sample (n = 205) is 30.691 with p value = 0.005. Thus, there are significant associations between IT governance structure and shared services delivery arrangement in these table variables (i.e. statistically significant differences exist between the five delivery arrangements and the five IT governance structures). In other words, the pattern of responses (i.e. the proportion of those organisations that adopt 'business monarchy', 'IT monarchy', 'federal', 'IT duopoly' & 'feudal') in the five delivery arrangements is significantly different.

To examine whether or not there is an association between IT governance structure and shared services delivery arrangement implemented by separate groups. The Fisher's Exact Test statistics show that there are statistically significant associations in the 'large-provider' group (n = 83, Fisher's Exact value = 25.110, p = 0.021), the 'small-provider' group (n = 26, Fisher's Exact value = 18.179, p = 0.012) and the 'total-provider' group (n = 109, Fisher's Exact value = 36.661, p < 0.001). The Fisher's Exact Test statistics for other groups are not significant at the 0.05 level.

Table 5.20: Chi-Square Tests – IT Infrastructure

Size	Relationship		Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	Likelihood Ratio	23.849	16	.093	.056	.050	.062
	n = 83	Fisher's Exact Test	25.110			.021	.017	.025
	Client	Likelihood Ratio	9.708	12	.642	.772	.761	.783
	n = 25	Fisher's Exact Test	11.527			.579	.566	.592
	Total	Likelihood Ratio	19.497	16	.244	.293	.281	.304
	n = 108	Fisher's Exact Test	19.689			.112	.104	.120
Small	Provider	Likelihood Ratio	22.031	12	.037	.035	.030	.039
	n = 26	Fisher's Exact Test	18.179			.012	.009	.014
	Client	Likelihood Ratio	18.639	16	.288	.416	.403	.429
	n = 71	Fisher's Exact Test	14.071			.511	.498	.524
	Total	Likelihood Ratio	17.811	16	.335	.513	.500	.526
	n = 97	Fisher's Exact Test	13.941			.512	.499	.525
Total	Provider	Likelihood Ratio	38.053	16	.001	.001	.000	.001
	n = 109	Fisher's Exact Test	36.661			.000	.000	.000
	Client	Likelihood Ratio	14.819	16	.538	.676	.664	.688
	n = 96	Fisher's Exact Test	13.622			.579	.566	.592
	Total	Likelihood Ratio	33.421	16	.006	.010	.007	.012
	n = 205	Fisher's Exact Test	30.691			.005	.003	.006

The statistics in Table 5.21 provide a measure of the strength of association between the variables. The Cramer's V value of total sample indicates that the relationship between IT governance structure and shared services delivery arrangement is a strong one (n = 205, Cramer's V value = 0.189, p = 0.024). The significant Cramer's V value for the 'total-provider' group indicates that there is very strong relationship between the two variables (n = 109, Cramer's V value = 0.283, p = 0.006). The relatively low significant Cramer's V value for the 'large-provider' group indicates

that there is very strong relationship between the two variables (n = 83, Cramer's V value = 0.290, p = 0.070). Although the Fisher's Exact Test of the 'small-provider' group is significant at the 0.05 level, its strength of association (Cramer's V values = 0.483) is redundant. The two variables are likely measuring the same concept. Hence, the relationships between the two variables in the 'large-provider' and 'small-provider' groups should be considered as not significant.

Table 5.21: Symmetric Measures – IT Infrastructure

Size	Relationship			Value	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Large	Provider	n = 83	Cramer's V	.290	.032	.070	.063	.077
	Client	n = 25	Cramer's V	.400	.447	.530	.517	.543
	Total	n = 108	Cramer's V	.206	.306	.294	.282	.306
Small	Provider	n = 26	Cramer's V	.483	.110	.091	.084	.099
	Client	n = 71	Cramer's V	.237	.458	.467	.454	.479
	Total	n = 97	Cramer's V	.201	.480	.491	.479	.504
Total	Provider	n = 109	Cramer's V	.283	.004	.006	.004	.008
	Client	n = 96	Cramer's V	.190	.610	.632	.620	.645
	Total	n = 205	Cramer's V	.189	.023	.024	.020	.028

Having constructed a five-by-five contingency table for each IT decision domain to identify the most likely IT governance structure adopted, Fisher's Exact Tests were then used to determine if the observed variations in IT governance structure differed by shared services delivery arrangement. The results reveal that for the total sample (n = 205), there is a strong significant association between IT governance structure and shared services delivery arrangement for all decision domains. The 'provider' group (n = 109) is also found to be significant for all decision domains. The results for 'large' group (n = 108) are mixed. There is a significant relationship in IT principles, but no significant relationship is found in the other four decision domains. Finally, there is no significant association in both 'small' group and 'client' group for all decision domains. The above assessment indicates that sufficient evidence has been obtained to claim support/non-support for each of the five hypotheses for the whole sample (n = 205) and allows us to confirm the conclusion drawn in the crosstab analysis, namely, organisations with different shared services delivery arrangements adopt different IT governance structures for decision making.

5.3.3 Summary Results – Assessment of IT Governance Structure (Decision Rights)

The summary representation of IT governance structure for each shared services delivery arrangement is shown in Table 5.22. IT governance structure (decision rights) refers to the extent to which groups make IT decisions or have final decision rights. 'Intra-service', 'service', and 'iso-corporate' organisations are more likely to adopt a 'business monarchy' IT governance approach for all IT decision domains (i.e., IT principle, IT investment, business application needs, IT architecture, and IT infrastructure) that reflects the commitment to offer total, integrated solutions to business needs. 'Corporate' organisations are more likely to assign a 'federal' IT governance approach for all decision domains (i.e., IT principle, IT investment, business application needs, IT

architecture, and IT infrastructure) which enhances the business unit performance in support of corporate objectives. 'Supra-corporate' organisations are more likely to implement a combination of 'business monarchy' for 'IT investment' and 'IT infrastructure'; and 'federal' approaches for 'IT principle', 'business application needs' and 'IT architecture' decision domains that empowers decision-making at multiple organisation levels. Senior business management are responsible for IT infrastructure and business application needs to ensure IT issues are incorporated into the organisation's strategic decision.

Table 5.22: Summary Results of Total Sample

Shared Services Delivery Arrangement/ IT Decision Domain	**Intra-service**		**Service**		**Corporate**		**Supra-corporate**		**Iso-corporate**	
All = 205	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**
IT principles	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Business Monarchy
IT investment	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Federal	Business Monarchy	Federal	Business Monarchy
Business application needs	Business Monarchy	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Federal	Federal	Federal	Federal	Business Monarchy
IT architecture	Feudal	Business Monarchy	IT Duopoly	Business Monarchy	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy
IT infrastructure	Feudal	Business Monarchy	IT Duopoly	Business Monarchy	IT Monarchy	Federal	IT Monarchy	Business Monarchy	IT Monarchy	Business Monarchy

[1] Federal – IT shared services management may be an additional participant

[2] IT Duopoly – IT shared services management represents IT

[3] IT Monarchy – IT shared services management acts solely

Table 5.23 provides a summary of all sample and group comparison results. Hypotheses are statistically accepted or rejected based on levels of significance and confidence intervals. In this study, the test results are based the following criteria:

1. Evaluate if there is any association between the variables by using Fisher's Exact Test. If the p value is greater than 0.05, then there is a 'not significant' relationship and the hypothesis is 'no support'.
2. If the Fisher's Exact Test statistics are significant at the 0.05 level, then determine the strength of the association by using Cramer's V statistics.
3. If the Cramer's statistics are greater than 1.0, interpret the pattern of the relationship by computing the percentages in the direction of the independent variable, across the dependent variable. Next, identify the highest observed frequencies in the relevant cells.
4. Compare the predicted and observed pattern and determine if the hypotheses are 'support', 'partially support' or 'no support'.

As shown in table 5.23, three hypotheses (H1a, H2a, & H3b) are supported, one hypothesis (H4b) is partially supported, and nine hypotheses (H1b, H2b, H3a, H3c, H3d, H4a, H4c H5a, & H5b) are not supported. The first research question associated with these hypotheses is reviewed in section 5.3.5.

Table 5.23: Summary Hypotheses Testing for IT Governance Structure (Decision Rights)

Hypothesis	Description	All Sample n = 205	Group Comparison			
			Provider n = 109	Client n = 96	Large n = 108	Small n = 97
1a	An 'intra-service' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.	Support	Support	No Support	Support	No Support
1b	An 'intra-service' arrangement for making IT architecture and IT infrastructure decisions will adopt a feudal governance design.	No Support	No Support	No Support	No Support	No Support
2a	A 'service' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.	Support	No Support	No Support	No Support	No Support
2b	A 'service' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT duopoly governance design.	No Support	No Support	No Support	No Support	No Support
3a	A 'corporate' arrangement for making IT principles and IT investment decisions will adopt a Business monarchy governance design.	No Support	No Support	No Support	No Support	No Support
3b	A 'corporate' arrangement for making business application needs decisions will adopt a federal governance design.	Support	Support	No Support	No Support	No Support
3c	A 'corporate' arrangement for making IT architecture decisions will adopt an IT duopoly governance design.	No Support	No Support	No Support	No Support	No Support
3d	A 'corporate' arrangement for making IT infrastructure decisions will adopt an IT monarchy governance design.	No Support	No Support	No Support	No Support	No Support
4a	A 'supra-corporate' arrangement for making IT principles decisions will adopt a business monarchy governance design.	No Support	No Support	No Support	No Support	No Support
4b	A 'supra-corporate' arrangement for making IT investment and business application needs decisions will adopt a federal monarchy governance design.	Partially Support	Support	No Support	No Support	No Support
4c	A 'supra-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.	No Support	No Support	No Support	No Support	No Support
5a	An 'iso-corporate' arrangement for making IT principles, IT investment, and Business application needs decisions will adopt a federal governance design.	No Support	No Support	No Support	No Support	No Support
5b	An 'iso-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.	No Support	No Support	No Support	No Support	No Support

5.3.4 Post Hoc Analysis – IT Governance Structure (Decision Rights)

A significant amount of research has brought to light factors that affect the choice of an IT governance structure within an organisation (Agarwal & Sambamurthy, 2002; Henderson & Venkatraman, 1993; Weill & Ross, 2004). The motivation for this post hoc test is to analyse the factors that have not been explored (e.g., shared services experience) and validate previous findings (e.g., organisation size) in a shared services environment.

To compare whether the differences among the participant groups (in terms of the distribution of IT governance structure versus shared services delivery arrangement for each IT decision domain, are statistically significant), two nonparametric tests, Mann-Whitney U test and Kruskal Wallis test, were performed. Nonparametric tests do not make assumptions about the type of data (e.g., that it is normally distributed). Many nonparametric procedures are based on ranked data.

Data are ranked by ordering them from lowest to highest and assigning them, in order, the integer values from 1 to the sample size. The analysis is then carried out on the ranks rather than the actual data. The Mann-Whitney U test for comparison of 2 groups (e.g., large versus small organisations) and the Kruskal-Wallis test for comparison of 3 or more groups (e.g., five management roles) are designed to detect whether 2 or more samples come from the same distribution or to test whether medians between comparison groups are different, under the assumption that the shapes of the underlying distributions are the same (Corder & Foreman, 2011).

5.3.4.1 Management Role

Table 5.24 shows the significance values (Monte Carlo Sig.) are $p > 0.05$ for all IT decision domains indicating there is no significant difference in the IT governance structure distribution in shared services delivery arrangement across the five categories of management role (‘ top management executive’ n = 104, ‘business unit leader’ n = 49, ‘local IT unit leader’ n = 27, ‘IT executive - shared services’ n = 8, and ‘others’ n = 17). Research suggests the position of responsible manager or executive is expected to influence IT governance adoption within organisations (Brown & Grant, 2005). For example, the business unit managers are extremely hesitant to have their careers and decisions managed by a centralised locus of control because they understand their business lines better than a centralised shared services steering committee (Boynton et al., 1992). From a practitioner standpoint, it is not surprising that business unit managers prefer a decentralised approach to IT governance. On the contrary, this study suggests that the five ‘management roles’ do not have significantly different perceptions of IT governance structure within each shared services delivery arrangement.

Table 5.24: Results Group Comparison – Management Role

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
Kruskal Wallis Test - Chi-Square			1.682	2.025	1.077	2.245	1.800
df			4	4	4	4	4
Asymp. Sig.			.794	.731	.898	.691	.772
Monte Carlo Sig.	Sig.		.788	.731	.902	.692	.779
	99% Confidence Interval	Lower Bound	.778	.719	.895	.680	.768
		Upper Bound	.799	.742	.910	.704	.789

Based on 10000 sampled tables with starting seed 334431365

5.3.4.2 Industry

Table 5.25 shows the significance values (Monte Carlo Sig.) are $p > 0.05$ for all IT decision domains indicating there are no significant differences in the IT governance structure distribution in shared services delivery arrangement across the sixteen categories of respondent industry (refer to Table 5.2). Little research has investigated whether ‘industry’ is a contingent factor to IT governance framework adoption. In their highly cited study of 303 organisations in Israel, Ahituv et

al. (1989) were unable to find any significant association between a corporation's industry type and the level of decentralisation of IT governance within the organisation. This study echoes their conclusion.

Table 5.25: Results Group Comparison – Industry

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
Kruskal Wallis Test - Chi-Square			12.157	12.894	14.110	16.028	13.685
df			15	15	15	15	15
Asymp. Sig.			.667	.611	.517	.380	.550
Monte Carlo Sig.	Sig.		.679	.628	.517	.386	.564
	99% Confidence Interval	Lower Bound	.667	.615	.504	.373	.551
		Upper Bound	.691	.640	.529	.398	.577

Based on 10000 sampled tables with starting seed 2000000

5.3.4.3 Degree of Shared IT Services

Table 5.26 shows the significance values (Monte Carlo Sig.) are $p > 0.05$ for all IT decision domains indicating there are no significant differences in the IT governance structure distribution in shared services delivery arrangement across various degrees of sharing IT services. The literature findings about organisational structure are highly dispersed and limited to certain fields. No consensus or best practice can be found about which arrangement is most useful for shared services (Friebe, 2013). In addition, the association existing between organisation structure and IT governance structure is not fully accepted (Brown & Grant, 2005). This study supports this argument.

Table 5.26: Results Group Comparison – Degree of Shared IT Services

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
Kruskal Wallis Test - Chi-Square			17.683	16.786	16.805	18.530	17.149
df			18	18	18	18	18
Asymp. Sig.			.477	.538	.537	.421	.513
Monte Carlo Sig.	Sig.		.479	.558	.557	.425	.525
	99% Confidence Interval	Lower Bound	.466	.545	.544	.412	.512
		Upper Bound	.492	.571	.570	.437	.538

Based on 10000 sampled tables with starting seed 221623949

5.3.4.4 Shared Services Relationship

For each IT decision domain shown in Table 5.27, the significance values (Monte Carlo Sig.) of Mann-Whitney tests are $p > 0.05$ indicating the IT governance structure distribution in shared services delivery arrangements does not differ significantly across the 'provider' and 'client' groups. From a practical point, the provider will typically want to preserve decision rights around the mechanics of agreed in-scope service delivery and it will defend its authority regarding how services are delivered for all decision domains. While this situation is critical to the provider's value model, it is often new to the client who is unaccustomed to releasing direct responsibility in this area (Accenture, 2007; Newman, 2007; Spoehr et al., 2007). However, this study is unable to find

significant evidence to support the observation about different perceptions of IT governance structure between 'provider' and 'client'.

Table 5.27: Results Group Comparison – Shared Services Relationship

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
Mann-Whitney U			4782.500	4731.000	4817.000	4668.000	4726.000
Wilcoxon W			9438.500	9387.000	9473.000	9324.000	9382.000
Z			-1.075	-1.194	-.993	-1.343	-1.207
Asymp. Sig. (2-tailed)			.282	.232	.321	.179	.227
Monte Carlo Sig.	Sig.		.285	.232	.325	.187	.230
	99% Confidence Interval	Lower Bound	.273	.221	.313	.177	.219
		Upper Bound	.297	.243	.337	.197	.241

Based on 10000 sampled tables with starting seed 334431365

Table 5.28 integrates the group comparison of shared services relationship based on the highest observed frequencies for each cell of IT governance structure versus shared services delivery arrangement. The significance tests reveal the individual subgroup may not be a good guide to the IT governance structure pattern. Only the 'provider' group is significant in all IT decision domains. Comparing the governance structures between 'provider' and 'client', the majority of the cells are the same. The 'intra-service' and 'iso-corporate' organisations are identical and they are more likely to adopt a 'business monarchy' governance approach in both groups. 'Service', 'corporate', and 'supra-corporate' organisations adopt a combination of 'business monarchy' and 'federal' approach in which the 'provider' group is more likely to adopt a 'federal' design.

Table 5.28: Summary Results of Group Comparison – Shared Services Relationship

Shared Services Delivery Arrangement/ IT Decision Domain Provider n = 109 Small n = 96	**Intra-service**		**Service**		**Corporate**		**Supra-corporate**		**Iso-corporate**	
	Predict	**Result**	**Predict**	**Result**	**Predict**	**Result**	**Predict**	**Result**	**Predict**	**Result**
IT principles										
Provider	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Business Monarchy
Client		Business Monarchy		Business Monarchy /Federal		Business Monarchy		Business Monarchy		Business Monarchy
IT investment										
Provider	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Federal	Federal	Business Monarchy
Client		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
Business application needs										
Provider	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Federal	Federal	Federal	Federal	Federal	Business Monarchy
Client		Business Monarchy		Business Monarchy		Federal		Federal		Business Monarchy /Federal
IT architecture										
Provider	Feudal	Business Monarchy	IT Duopoly	Federal	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy
Client		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
IT infrastructure										
Provider	Feudal	Business Monarchy	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy
Client		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy

[1] Federal – IT shared services management may be an additional participant

[2] IT Duopoly – IT shared services management represents IT
[3] IT Monarchy – IT shared services management acts solely

5.3.4.5 Organisation Size

Table 5.29 shows the significance values of Mann-Whitney tests (Monte Carlo Sig) are $p < 0.05$ indicating there is a significant difference between the 'large' and 'small' groups. The lower and upper bound confidence interval for significance for each variable is also important. For example, for IT principles, the actual 99% Confidence Interval Lower Bound value is 0.019 and the Upper Bound value is 0.027. The fact that these values do not cross the critical value 0.05 indicates that the significant effect is genuine. Thus, it can be noted that the two groups significantly differ in IT principles ($U = 4305.5$, $p = 0.026$), IT investment ($U = 4111.5$, $p = 0.006$), business application needs ($U = 4248.0$, $p = 0.018$), IT architecture ($U = 4131.5$, $p = 0.008$), and IT infrastructure ($U = 4254.0$. $p = 0.019$).

In a number of studies, the size of an organisation could not be supported as a significant antecedent for the adoption of a particular IT governance design (Brown & Grant, 2005; Olson & Chervany, 1980). Ein-Dor and Segev (1982) were only able to significantly support for an association when firm size was measured in terms of total revenue, but not when firm size was measured in terms of employee headcounts. In contrast, this study confirms the IT governance structure differs between 'large' (employee number > 150) and 'small' organisations (employee number < = 150) in different shared services delivery arrangements.

Table 5.29: Results Group Comparison – Organisation Size

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
Mann-Whitney U			4305.500	4111.500	4248.000	4131.500	4254.000
Wilcoxon W			9058.500	8864.500	9001.000	8884.500	9007.000
Z			-2.228	-2.684	-2.368	-2.634	-2.346
Asymp. Sig. (2-tailed)			.026	.007	.018	.008	.019
Monte Carlo Sig.	Sig.		.024	.006	.018	.008	.019
	99% Confidence Interval	Lower Bound	.020	.004	.014	.006	.015
		Upper Bound	.028	.008	.021	.011	.022

Based on 10000 sampled tables with starting seed 1535910591

Table 5.30 integrates the group comparison of organisation size based on the highest observed frequencies for each cell containing IT governance structure versus shared services delivery arrangement. The significance tests reveal the individual subgroup may not be a good guide to the IT governance structure pattern. Except for IT principles decision domain, the 'large' organisations are significant for all IT decision domains. The 'small' organisations are more likely to adopt a 'business monarchy' governance approach in almost all shared services delivery arrangements. The 'large' organisations are more likely to adopt a 'business monarchy' approach for 'intra-service' and 'iso-corporate' delivery arrangements and a 'federal' approach for 'service', 'corporate', and 'supra-corporate' delivery arrangements.

Table 5.30: Summary Results of Group Comparison – Organisation Size

Shared Services Delivery Arrangement/ IT Decision Domain Large n = 108 Small n = 94	**Intra-service**		**Service**		**Corporate**		**Supra-corporate**		**Iso-corporate**	
	Predict	**Result**	**Predict**	**Result**	**Predict**	**Result**	**Predict**	**Result**	**Predict**	**Result**
IT principles										
Large	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Business Monarchy
Small		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
IT investment										
Large	Business Monarchy	Business Monarchy	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Federal	Federal	Business Monarchy
Small		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
Business application needs										
Large	Business Monarchy	Federal	Business Monarchy	Federal	Federal	Federal	Federal	Federal	Federal	Business Monarchy
Small		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
IT architecture										
Large	Feudal	Federal/Business M	IT Duopoly	Federal	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy
Small		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy
IT infrastructure										
Large	Feudal	Federal	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy
Small		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy		Business Monarchy

[1] Federal – IT shared services management may be an additional participant

[2] IT Duopoly – IT shared services management represents IT

[3] IT Monarchy – IT shared services management acts solely

Further Mann-Whitney tests are run to investigate the differences between 'provider' and 'client' within the 'large' and 'small' groups. For each IT decision domain shown in Table 5.31, the significant values (Monte Carlo Sig.) of Mann-Whitney tests are $p > 0.05$ indicating the IT governance structure distribution in shared services delivery arrangements does not differ significantly between 'provider' and 'client' within the 'large' group.

Table 5.31: Results Group Comparison – Large Organisation Size x Shared Services Relationship

IT Decision Domain			**IT principles**	**IT Investment**	**Business Application Needs**	**IT Architecture**	**IT Infrastructure**
Mann-Whitney U			985.000	1034.000	945.000	1019.500	1019.000
Wilcoxon W			4471.000	4520.000	4431.000	1344.500	1344.000
Z			-.402	-.026	-.702	-.135	-.140
Asymp. Sig. (2-tailed)			.688	.979	.483	.892	.889
Monte Carlo Sig.	Sig.		.692	.981	.494	.893	.889
	99% Confidence Interval	Lower Bound	.680	.978	.481	.885	.881
		Upper Bound	.704	.985	.507	.901	.897

Based on 10000 sampled tables with starting seed 1310155034

In Table 5.32, the significant values of Mann-Whitney tests (Monte Carlo Sig) are $p > 0.05$ indicating the IT governance structure distribution in shared services delivery arrangement does not differ significantly between 'provider' and 'client' within the 'small' group.

Table 5.32: Results Group Comparison – Small Organisation Size x Shared Services Relationship

IT Decision Domain		**IT principles**	**IT Investment**	**Business Application Needs**	**IT Architecture**	**IT Infrastructure**
Mann-Whitney U		900.500	871.000	909.500	886.500	886.500
Wilcoxon W		1251.500	1222.000	1260.500	1237.500	1237.500
Z		-.184	-.427	-.111	-.299	-.299
Asymp. Sig. (2-tailed)		.854	.669	.912	.765	.765
Monte Carlo Sig.	Sig.	.853	.670	.914	.773	.771

IT Decision Domain			IT principles	IT Investment	Business Application Needs	IT Architecture	IT Infrastructure
	99% Confidence Interval	Lower Bound	.844	.658	.907	.762	.760
		Upper Bound	.862	.682	.922	.784	.782

Based on 10000 sampled tables with starting seed 1585587178

The above group comparison analysis reveals that, between organisation sizes, there is significant statistical difference in the distribution of IT governance structure and shared services delivery arrangement for each IT decision domain. For the participant management role, industry, degree of IT shared services, and shared services relationship, there is no statistical difference in the IT governance structure pattern within these groups. However, this study suggests a single contingency investigation for IT governance framework should not be conclusive, multiple contingencies with considering possible interactions should be more appropriate for future research (Brown & Grant, 2005).

5.3.5 Review of Research Question One – IT Governance Structure (Decision Rights)

This study predicts in hypotheses H1 to H5 that organisations govern IT very differently depending on two factors: IT decision domain and shared services delivery arrangement. Table 5.33 below summarises the hypothesis testing for IT governance structure (decision rights). In analysing the IT decision makers, this study has found that most of the organisations do not have very different governance archetypes for different IT decision domains. Based on the research findings discussed in the previous sections, the first research question, "G*iven a particular type of IT shared services delivery arrangement, what should be the IT governance structure (decision rights) adopted within an organisation?"* posed by this study is discussed.

Table 5.33: Consolidated Hypothesis Testing for IT Governance Structure (Decision Rights)

Shared Services Delivery Arrangement/ IT Decision Domain	**Intra-service**		**Service**		**Corporate**		**Supra-corporate**		**Iso-corporate**	
All sample n= 205	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**	**Hypothesis**	**Result**
IT principles	Business Monarchy H1a Support	Business Monarchy	Business Monarchy H2a Support	Business Monarchy	Business Monarchy H3a No Support	Federal	Business Monarchy H4a No Support	Federal	Federal H5a No Support	Business Monarchy
IT investment	Business Monarchy H1a Support	Business Monarchy	Business Monarchy H2a Support	Business Monarchy	Business Monarchy H3a No Support	Federal	Federal H4b Partially Support	Business Monarchy	Federal H5a No Support	Business Monarchy
Business application needs	Business Monarchy H1a Support	Business Monarchy	Business Monarchy H2a Support	Business Monarchy	Federal H3b Support	Federal	Federal H4b Partially Support	Federal	Federal H5a No Support	Business Monarchy
IT architecture	Feudal	Business Monarchy	IT Duopoly	Business Monarchy	IT Duopoly	Federal	IT Monarchy	Federal	IT Monarchy	Business Monarchy

Shared Services Delivery Arrangement/ IT Decision Domain All sample n= 205	Intra-service		Service		Corporate		Supra-corporate		Iso-corporate	
	Hypothesis	Result	Hypothesis	Result	Hypothesis	Result	Hypothesis	Result	Hypothesis	Result
	H1b No Support		H2b No Support		H3c No Support		H4c No Support		H5b No Support	
IT infrastructure	Feudal H1b No Support	Business Monarchy	IT Duopoly H2b No Support	Business Monarchy	IT Monarchy H3d No Support	Federal	IT Monarchy H4c No Support	Business Monarchy	IT Monarchy H5b No Support	Business Monarchy

[1] Federal – IT shared services management may be an additional participant

[2] IT Duopoly – IT shared services management represents IT

[3] IT Monarchy – IT shared services management acts solely

5.3.5.1 IT principles

IT principles, which set the strategic role for IT across the enterprise, are predicted to be governed in two ways: 'intra-service', 'service', 'corporate', and 'supra-corporate' organisations will adopt a business monarchy approach, and 'iso-corporate' organisations will adopt a federal approach. Business monarchy enhances the likelihood that IT principles will be aligned with business strategy. Federal approach for IT principles ensures business units share the decisions in defining the role of IT. The findings reveal that 'intra-service', 'service', and 'iso-corporate' organisations did indeed choose business monarchy on average. 'Corporate' and 'supra-corporate' organisations used a federal model.

In general, IT principles' resources have a high value in competitive advantage. The business knowledge is essential to ensure that IT principles will be formulated effectively and applied consistently in a shared services environment. As the degree of shared IT increases, a federal approach can balance the interests of the corporate, service provider, and all the business units. Contrary to the prediction, 'iso-corporate' organisations do not adopt a federal approach. The possible explanations might be that a federal model is less efficient and effective for decision-making. The main objective of the introduction of the 'iso-corporate' delivery arrangement is to lower costs through increased efficiency and competition in the market. However, research indicates the federal approach often takes longer time to make decisions as more people and stages are involved, but there is less agreement on the objectives for the decisions (Weill & Ross, 2004). The long cycle times compound the problems with poor governance. Therefore, it is likely that neither the business units nor the external customers get the responsive services with lower costs. Hence, business monarchy seems to be more efficient and effective for 'iso-corporate' organisations to allow the production of more competitive services. H1a and H2a are supported. H3a, H4a and H5a are not supported.

5.3.5.2 IT investment

IT investment resources have, generally, a high value in competitive advantage and require the relevant business knowledge to facilitate an integrated view of the enterprise's key assets. Two approaches dominate the allocation of IT investment decision rights, namely business monarchy and federal. Contrary to expectations, 'supra-corporate' and 'corporate' organisations adopted a business monarchy approach instead of a federal model. Business monarchy is well positioned to define and fund business priorities. Business monarchy should also be responsible for overall budgeting decisions for the shared services joint venture. Thus, vesting responsibility for IT investment and prioritisation in a business monarchy allows IT projects to compete for funds with other inter- or intra-organisational needs. The potential explanation for the difference between predicted and actual IT governance structure could be the need to minimise agency risk. With higher degrees of shared IT, the less autonomously the business unit is allowed to fund IT at regional offices. Using a central funding mechanism can address strategic global needs. Thereby, a business monarchy approach seems to be more appropriate. For example, vesting responsibility for overall capital budgeting decisions in a business monarchy allows IT projects to compete for funds with other organisational needs. 'Corporate' organisations prefer a federal approach instead of business monarchy to balance enterprise-wide priorities and business unit priorities. H1a and H2a are supported. H3a and H5a are not supported. H4b is partially supported.

5.3.5.3 Business Application Needs

People who make business application needs decisions specify the business needs for systems to be acquired. Therefore, the resources should have a relatively high impact on competitive advantage creation and a medium impact on competitive sustainability. In this study, organisations display both federal and business monarchy approaches to these decisions. Consistent with the predictions, the higher the degree of shared IT, the more the federal approach seems to be appropriate. The federal model considers enterprise objectives in the process of deploying client business applications. Implementation of client business applications may replicate or customise an enterprise-wide application. For example, a 'supra-corporate' organisation can purchase an enterprise resource planning application for inter-organisational sharing. For some data definitions, it does not standardise the application across organisations or business units. Decision rights are granted to local business units for the benefits of local customisation over global standardisation while shared expertise can also be accommodated. For 'iso-corporate' organisations, business monarchy is the most popular choice. The possible explanation might be that economies of scale can be achieved through centralisation and standardisation. Over a technology's life cycle,

standardisation can affect economic efficiency that is essential to attracting external customers in 'iso-corporate' organisations. H1a and H2a are supported. H3b and H5a are not supported. H4b is partially supported.

5.3.5.4 IT Architecture

Contrary to the prediction and other research (Weill & Ross, 2004), all five shared services delivery arrangements do not rely on feudal, IT duopoly and IT monarchy to make IT architecture decisions. This study assumes that IT architecture is a technical issue rather than business strategic issue. Therefore, the business knowledge required to make effective decision should be minimal. However, the findings suggest most organisations attempt to incorporate business strategy considerations into architecture decisions via federal or business monarchy arrangements. Traditionally, efforts to manage IT architecture issues remain rooted in an organisation's IT practices, culture, and leadership. The IT architecture program leader is frequently selected from within the technical ranks, bringing deep IT know-how but little direct experience or influence in leading a business-wide change program. A weak linkage to the business may create a void that limits the quality of the resulting IT architecture and the organisation's ability to enforce and sustain the benefits of implementation over time (Khosrowpour, 2002).

In recent years, the scope of IT architecture has expanded beyond the IT domain and is increasingly taking on broader roles relating to organisational strategy and change management. This new approach lifts the IT architecture function out of the exclusive preserve of the IT department and places IT more squarely within the business (Bonnet et al., 2013). Therefore, IT architecture is more a business decision. Organisations seem to have less confidence that IT professionals, such as the service provider, can translate IT principles into an architecture. In coordinating IT efforts, the risk of IT monarchy is that it can become isolated from organisational reality. Considerable waste of resources might result if no client representative is involved to convert technology improvements into business value. H1b, H2b, H3c, H4c and H5c are not supported.

5.3.5.5 IT Infrastructure

Like IT architecture, this study predicts that IT infrastructure strategy decisions are made within the IT unit. With the increased degree of shared IT, the location of IT infrastructure knowledge should reside in the provider. IT monarchy allows the provider independence in designing service offerings. IT duopoly should be well suited to relatively quick negotiation of the business, technology, and political issues associated with shared infrastructure services (Weill &

Ross, 2004). However, the findings are unexpected and do not support the allocation of decision rights to feudal, IT duopoly, or IT monarchy. The possible explanation might be that an 'iso-corporate' organisation, for example, is required to sell its services to the client. Hence, its customers' demands strongly influence its services. These demands are articulated by the client at the top management level to maximise the business value or minimise the agency risk.

With a low degree of shared IT, this study predicts the use of a feudal model to specify the IT needs for different business units as they try to best serve their local clients. The centralised IT governance structure is striving to implement organisation-wide programs such as improving service quality or reducing cost by removing duplication. The tension between the dual pressures of autonomy and centralised strategic focus might result in poorer IT governance effectiveness. This study demonstrates a feudal approach is not adopted in a IT shared services environment. H1b, H2b, H3d, H4c and H5b are not supported.

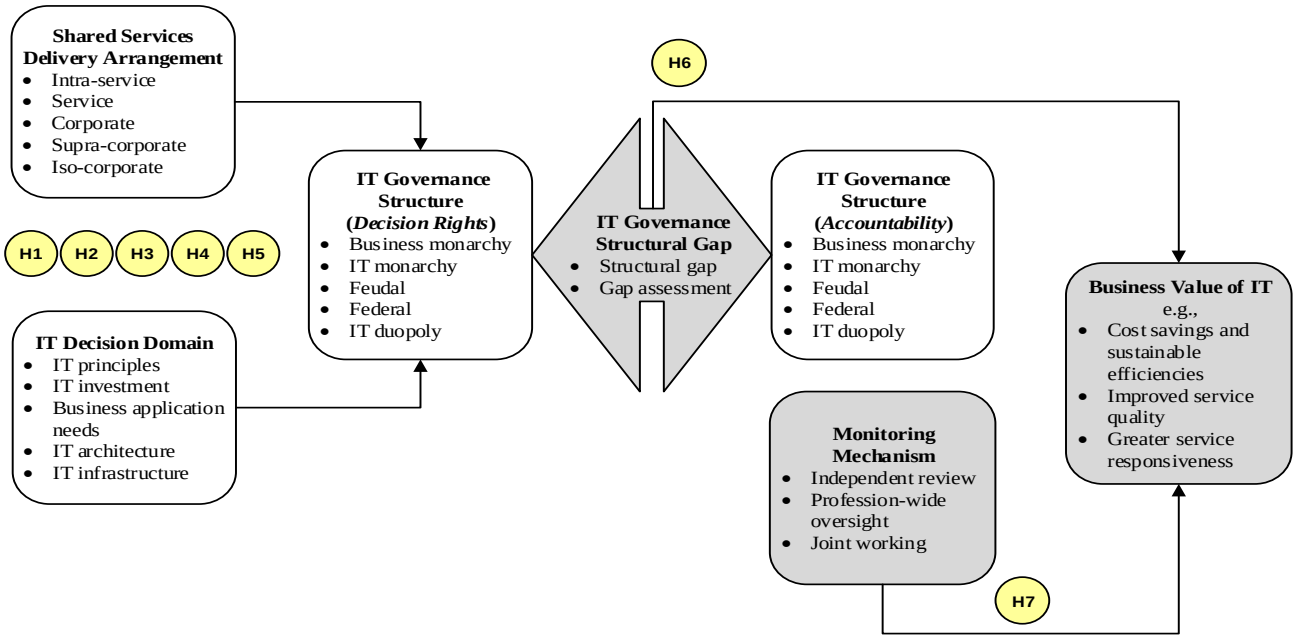
In summary, four hypotheses could be confirmed as 'supported' or 'partially supported' with nine hypotheses receiving 'no support' based on the results. The agency framework suggests an allocation of decision rights that favours the managers who have the most specific relevant knowledge of all the agents of the firm. According to the findings of this study, organisations have more top management and senior management involvement in their IT governance structure for each IT decision domain in all shared services delivery arrangements. Therefore, the location of business/IT knowledge might not be a contingent factor in devising the IT governance structure.

This study views that the types of resources is another factor used to determine the way in which IT are to be shared and governed. The resource-based view also seems unable to fully provide the clarification of IT governance structure design. Overall, the structural solution to the principle-agent problem is to centralise IT governance structure in a shared services environment. The implications of the findings will be further discussed in Chapter 6.

5.4 Partial Least Squares Analysis – Assessment of Business Value of IT

This study utilises the variance-based Partial Least Squares (PLS) approach to test the hypotheses in the second part of the research model as shaded in Figure 5.8, i.e., H6 and H7.

Figure 5.8: Assessment of Research Model – Part 2



Three criteria were considered to determine PLS as the appropriate choice of statistical method. First, the research model builds upon previous knowledge and applies the conceptual elements in a new research environment, i.e., IT shared services (Weill & Ross, 2004). Despite aiming at testing hypotheses, this research approach has a rather explorative character. Although PLS is a confirmatory testing procedure, the variance-based method can be used to maximize the prediction quality of the overall model (Chin, 1998). Second, the variance-based PLS algorithm does not require any distribution assumption (Hair et al., 2010). Small sample sizes are unlikely to meet homogeneity and normality requirements (Hair et al., 2010). Moreover, this study involved nominal (e.g., making use of IT governance frameworks) and ordinal data (e.g., assessment of business value) that could not satisfy homogeneity and normality requirements (Hair et al., 2010). Consequently, this study employs the variance-based PLS approach for estimating factor weights and path coefficients. Third, the variance-based algorithm of PLS can be performed with a significantly lower number of data elements. The quality of the overall model can be assessed by using re-sampling methods (e.g., bootstrapping). As these methods allow multiple drawings from the same sample base, they are far less influenced by a smaller sample size.

Generally, a PLS model is analysed and interpreted in two stages, that is, the assessment of the adequacy of measurement model followed by the assessment of structural model. This sequence

is to ensure reliability and validity of the measures before any attempt is made to draw conclusion on the structural model. Hair et al. (2010) recommend this approach to be adopted in cases where measures are anticipated to be less reliable or in cases where theory is only tentative. This work employed the SmartPLS 2.0 (M3) application (Ringle et al., 2005) to carry out the following assessment procedures.

5.4.1 Assessment of Measurement Model

To assess whether the five variables, namely *structural gap, gap assessment, independent review, professional oversight and joint working*, influence the *business value*, the PLS path modelling is used. The measures for each of these variables are described in Table 4.11. *Structural gap* refers to the identified difference between decision rights and accountability. *Gap assessment* includes mapping the current governance structure onto the anticipated governance structure, auditing IT governance metrics and accountabilities, and evaluating IT governance awareness and engagement on a regular basis. *Independent review* is the practice of having competent, objective reviewers evaluate the IT shared services policy and monitor the service agreement. *Profession-wide oversight* involves the systematic application of IT rules, standards, or principles developed from research and the actual practices of and incidents experienced by major organisations. *Joint working* is defined as the joint effort by which the service provider and client produce the service. *Business value* refers to the degree to which predefined IT shared services objectives are realised in terms of strategic, economic, technological, social benefits.

First, the measurement model is evaluated by assessing the reliability and validity of the measures. Reliability is the extent to which 'a particular technique, applied repeatedly to the same object, would yield the same result each time' (Babbie, 1992, p. 129). Validity is defined as 'the extent to which measurements indicate what they are intended to measure' (Schutt, 1999, p.83). In addition, the measurement model consists of the relationship between the constructs and the indicators (i.e., items) used to measure them. This relationship implies the examination of internal consistency, convergent validity, and discriminate validity of the instrument (Barclay et al., 1995; Boudreau et al., 2001; Straub et al., 2004). Table 5.34 shows the required determinants of the measurement model.

Table 5.34: Quality Criteria of Measurement Model

Test	Measure	Cut-off	Reference
Internal Consistency	Composite Reliability (CR)	≥ 0.7	Hair et al. (2010)
	Cronbach's Alpha (α)	≥ 0.6	Nunnally (1978)
Convergent Validity	Loading - Confirmatory Factor Analysis (CFA)	≥ 0.6	Hulland (1999)
	Average Variance Extracted (AVE)	≥ 0.5	Hair et al. (2010)
Discriminant Validity	Compare Cross Loadings	Cross loadings < Construct Correlations	Gefen and Straub (2005)

5.4.1.1 Internal Consistency Measures

According to Vogt (2005, p.195) 'internal consistency and reliability of a measure is the extent to which the measure provides consistent results from one application to the next, or the degree to which the measure is free of random error'. The first type of diagnostic measure is reliability coefficient, which assesses the consistency of the entire scale, with Cronbach's alpha (Nunnally, 1978). The generally agreed upon lower limit for the Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research (Hair et al., 2010). The composite reliability for each construct should be greater than 0.70 (Hair et al., 2010).

All constructs were analysed using PLS for adequate internal consistency reliabilities. As shown in Table 5.35 all constructs have composite reliability values of greater than the recommended threshold value of 0.70 (Agarwal & Karahanna, 2000; Barclay et al., 1995). Reliability was also tested using Cronbach's Alpha values. The Cronbach's alpha coefficients for the five factors range from 0.87 - 0.96. All reliability measures are in excess of what Nunnally (1967) regarded as minimally acceptable value of 0.60 and demonstrate high internal consistency. In this study, most values are in a range above or close to 0.90 and thus are considered acceptable and strong. Thus, the results suggest the measurement model has adequate internal consistency reliabilities.

Table 5.35: Reliability Measures

Construct	Composite Reliability	Cronbach's Alpha
Business Value	0.964	0.959
Gap Assessment	0.955	0.929
Independent Review	0.911	0.869
Joint Working	0.940	0.923
Profession-wide Oversight	0.916	0.895
Structural Gap	1.000	1.000

5.4.1.2 Convergent Validity of Measures

Convergent validity refers to whether the items comprising a scale behave as if they are measuring a common underlying construct (Hulland, 1999). In this sense, all items measuring the same construct should correlate with the items in the same scale (Bagozzi et al., 1991). Convergent validity of the scale items was assessed using two criteria: the item factor loadings should be significant and exceed 0.60; and average variance extracted (AVE) for each construct should exceed the variance attribute to measurement error (i.e., AVE $\geq$ 0.50) (Fornell & Larcker, 1981). AVE measures the amount of variance that a latent variable component captures from its indicators relative to the amount due to measurement error (Chin, 1998; Fornell & Larcker, 1981). The AVE values in Table 5.36 show all constructs exceed the recommended threshold value of 0.50 (Fornell & Larcker, 1981). Convergent validity is also assessed using the standardised confirmatory factor analysis.

As shown in Table 5.37, loadings for all reflective items in the model exceed the minimum required loading criterion of 0.60. The confirmatory factor analysis results also indicate all items are loaded more highly on their own construct than on other constructs, except POB2 'make use of 'Information Technology Infrastructure Library (ITIL) framework'. The relatively low levels of agreement for this item might be associated with experience of benchmarking, practical implementation and professional knowledge of the ITIL framework. However, the item POB2 'make use of 'Information Technology Infrastructure Library (ITIL) framework' fits conceptually with the other best practice framework items on 'profession-wide oversight', and as such this item should be retained. Thus, the results suggest the measurement model demonstrates adequate convergent validity.

Table 5.36: Inter-Construct Correlations

		Correlations of among Constructs					
Average Variance Extracted	Construct	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
0.731	Business Value	0.855					
0.876	Gap Assessment	0.438	0.936				
0.720	Independent Review	0.604	0.576	0.848			
0.722	Joint Working	0.643	0.312	0.554	0.850		
0.578	Profession-wide Oversight	0.721	0.648	0.740	0.667	0.760	
1.000	Structural Gap	-0.082	0.067	0.071	-0.023	0.062	1.000

Table 5.37: Outer Model Loadings and Cross Loadings

Cross Loadings	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
BVP1	**0.841**	0.350	0.507	0.525	0.596	-0.043
BVP2	**0.876**	0.381	0.520	0.593	0.630	-0.016
BVP3	**0.859**	0.430	0.541	0.566	0.658	-0.075
BVP4	**0.884**	0.344	0.511	0.557	0.638	-0.100
BVP5	**0.878**	0.400	0.555	0.585	0.650	-0.083
BVP6	**0.782**	0.288	0.417	0.389	0.500	-0.085
BVP7	**0.871**	0.438	0.583	0.510	0.669	-0.058
BVP8	**0.868**	0.395	0.518	0.545	0.601	-0.081
BVP9	**0.810**	0.350	0.492	0.536	0.581	-0.110
BVP10	**0.875**	0.350	0.497	0.658	0.619	-0.057
GA1	0.376	**0.936**	0.538	0.263	0.589	0.107
GA2	0.443	**0.942**	0.570	0.312	0.649	0.007
GA3	0.404	**0.930**	0.506	0.296	0.577	0.083
IR1	0.465	0.543	**0.796**	0.414	0.639	0.058
IR2	0.573	0.380	**0.785**	0.591	0.566	0.076
IR3	0.504	0.525	**0.911**	0.438	0.658	0.044
IR4	0.485	0.517	**0.895**	0.404	0.648	0.060
JW1	0.509	0.166	0.382	**0.830**	0.498	0.005
JW2	0.533	0.222	0.424	**0.870**	0.547	-0.066
JW3	0.523	0.273	0.471	**0.891**	0.600	0.006
JW4	0.492	0.231	0.467	**0.840**	0.513	-0.037
JW5	0.659	0.339	0.519	**0.886**	0.629	-0.002
JW6	0.533	0.335	0.546	**0.777**	0.596	-0.029
POA1	0.613	0.522	0.645	0.625	**0.846**	0.026
POA2	0.652	0.429	0.554	0.653	**0.831**	0.061
POA3	0.625	0.420	0.540	0.679	**0.808**	0.013
POA4	0.626	0.453	0.617	0.679	**0.833**	0.030
POB1	0.478	0.630	0.555	0.289	**0.705**	0.012
POB2	0.417	0.499	0.563	0.296	**0.626**	0.165

Cross Loadings	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
POB3	0.446	0.563	0.538	0.308	**0.705**	0.033
POB4	0.454	0.535	0.513	0.339	**0.696**	0.073
SG1	-0.082	0.067	0.071	-0.023	0.062	**1.000**

5.4.1.3 Discriminant Validity of Measures

Discriminant validity complements convergent validity, and represents the extent to which measures of a given construct differ from measures of other constructs in the same model (Hulland, 1999). Following suggestions by Hulland (1999) and Chin (1998), discriminant validity is assessed by examining the cross loadings of each item in the constructs, and the square root of average variance extracted (AVE) for each construct. The first criterion of discriminant validity is assessed by examining that all items load more strongly on their corresponding construct than on other constructs in the models (i.e., loadings should be higher than cross-loadings). The second criterion of discriminant validity is assessed by examining the square root of AVE for each construct which needs to be higher than the correlations of that construct with all others (Fornell & Larcker, 1981). Thus, discriminant validity is satisfied when the diagonal elements (square root AVE – shaded numbers) are greater than the off-diagonal elements in the same row and column. As Table 5.36 shows, all constructs satisfied this criterion.

If the correlation between different variables is closer or lower than the square root of the AVE, it is justified to consider them as distinct theoretical entities. Note that the square root of the AVE for 'profession-wide oversight' (0.760) is not much higher than the high correlation between 'profession-wide oversight' and 'joint working' (0.667). Even though this is not enough for discriminant validity to be questioned, it may be indicative of collinearity[8]. Thus, the variance inflation factor (VIF) can be used as a criterion for multicollinearity assessment.

The VIF determines the variance impact on the regression coefficients caused by multicollinearity. A proven maximum level of VIF is 10 (Cohen, 2003; Kutner et al., 2004). The more conservative threshold VIF is 3.3 (Diamantopoulos & Siguaw, 2006). Higher levels of VIF suggest a potential issue of multicollinearity. However, low levels of VIF do not prove its absence. To complement the VIF-value analysis, this study uses the condition index (CI). CI represents the collinearity of combinations of variables (Hair et al., 2010). The higher the CI value, the higher the degree of collinearity presents amongst the indicators. CI values below 30 remain acceptable (Belsley et al., 2005; Hair et al., 2010). Table 5.38 contains VIFs and the condition indices for all formative constructs. All indicators of the construct show VIF-values between 1.023 and 2.948 that

[8] Collinearity between a pair of latent variables may be associated with a few offending indicators that are highly correlated with both latent variable scores. This situation would be indicated by high cross-loadings for those indicators from a confirmation factor analysis.

are well below the threshold of 10. In addition, the CI remains below the acceptable level of 30. Hence, no collinearity exists in all constructs.

Table 5.38: Vertical Collinearity Estimates

Construct Condition Index (CI) = 20.382	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
Business Value	1.149	2.294	1.957	2.948	1.023

5.4.1.4 Quality of Measurement Model

Table 5.39 provides an overview on the descriptive statistics for each construct, e.g., mean and standard deviation, and the scale ranges. All scales show satisfactory levels of differentiation and the ranges of the indicators have been used to their full extent by the respondents. The 'profession-wide oversight' scale, however, is characterized by a relatively low arithmetic mean and slightly smaller standard deviation in comparison to the other constructs.

Table 5.39: Descriptive Statistics for Each Construct

Construct	Number of Items	Maximum	Minimum	Mean	Standard Deviation	Question
Business Value	10			5.206	1.063	Q7.1 – Q7.2
Gap Assessment	3	5	1	3.085	1.537	Q5.1 – Q5.3
Independent Review	4	7	1	4.654	1.557	Q6.1
Joint Working	6	7	1	5.443	1.091	Q6.2
Profession-wide Oversight	8	5	1	3.468	0.938	Q6.3 – Q6.4
Structural Gap[9]	1	100	0	11.423	16.422	Q4.1 – 4.5

In the preceding sections, several statistics were used to assess the internal consistency, convergent and discriminant validity of the measurement model. First, all items loaded positively and significantly on their respective constructs. Second, all constructs exhibited composite reliabilities of 0.90 or higher. Third, the average variance extracted (AVE) for all constructs exceeded the threshold value of 0.60. The square root of the AVE for each construct was greater than all other cross-correlations, thus providing evidence for the distinctiveness of the constructs. The confirmatory factor analysis loadings further established this discriminant validity. All items had high loadings in their respective constructs with low cross-loadings in the others, except POB2 'make use of 'Information Technology Infrastructure Library (ITIL) framework'. In summary, sufficient evidence has been demonstrated, on balance, to show that the measurement model displays satisfactory levels of reliability and validity. The next step is to assess the structural model.

[9] Structural Gap is the total absolute value of the difference between decision rights and accountability for each IT governance decision domain.

5.4.2 Assessment of Structural Model

After testing the measurement model, the PLS structural model and hypotheses can be assessed. A structural model is used to capture the linear regression effects of the exogenous constructs on the endogenous constructs and the regression effects of the endogenous constructs upon one another (Hair et al., 2010). The structural model is of interest to researchers because it offers a direct test of the theory of interest (Cheng, 2001). As PLS makes no distributional assumptions, bootstrapping (i.e., 500 samples with replacement) is used to test the statistical significance of each path coefficient (Chin, 1998).

First, PLS provides the squared multiple correlation (R^2) for each endogenous construct in the model, a measure of the percentage of a construct's variation that the model explains. R^2 is similar to regression and it is used to measure the percentage of a construct's variation that the model explains (Chin, 1998). The R^2 value represents the amount of variance explained by the independent variables, thereby providing insight into the model's predictive power (Chin, 1998; Fornell & Larcker, 1981). The examination of the structural model leads to either rejection or confirmation of hypotheses. Chin (1998) categorises R^2 values, 0.67, 0.33 and 0.19, as 'substantial', 'moderate' and 'weak' respectively.

The second measure of the structural model provided by PLS is the path coefficient (β), indicating the strength of relationship between two constructs (dependent and independent variables). Dependent and independent variables need to be significant and directionally consistent with expectations. This procedure provides an estimate of the standard error for each salience[10] in (singular vector weight) all latent variables, and serves to assess the contribution of each data point to the latent variable structure. In theory, the p value is a continuous measure of evidence. However, in practice it is typically trichotomized as approximately highly significant, marginally significant, and not statistically significant at conventional levels, with cutoffs roughly at p = 0.01, 0.05 and 0.10. According to Gujarati (1995) and Fishers (1958), the p value should not be interpreted as a hypothetical frequency of 'error' but rather as a measure of evidence meant to be combined with alternative sources of information about the phenomenon under study. Thus, the threshold of p value of less than 0.05 for significance used in this thesis to interpret the relationship of each path is reasonable because the interpretation of the results is also dependent on background knowledge about the phenomenon being investigated (Gujarati, 1995).

Third, instead of looking solely at significant structural paths and loadings, closer attention should perhaps be given to the predictiveness of the model. Structural paths and loadings with

[10] The coefficients of a PLS analysis represent the angular relations of the variables within one data block with respect to those in the other data block. They represent the variables that are most useful or salient for predicting patterns in the other data block. For this reason, they are referred to as saliences.

substantial strength should be the focus of investigation. As described by Chin (1998), the effect size (f^2) indicates how substantial the influence of the independent variable on the dependent variable is. SmartPLS does not provide the effect size value directly, but it can be calculated using the following formula (Cohen, 1988):

$$f^2 = \frac{R^2 \text{ (included)} - R^2 \text{ (excluded)}}{1 - R^2 \text{ (included)}}$$

In PLS path modelling, the effect sizes of different constructs can be investigated by considering the explained variance of dependent variables. When a construct is removed from the research model, the explained variance of the dependent variable (R^2) changes. A change in R^2 is used to estimate whether the impact of a specific exogenous construct has a substantive impact (effect size f^2). An effect size f^2 value of 0.02 indicates that a construct has a small impact on explained variance (R^2), an effect size of 0.15 a medium impact, and an effect size of 0.35 a large impact, respectively (Cohen, 1988).

Finally, the quality of the structural model can be measured using a redundancy index (i.e. Stone-Geisser Q^2) that gives an estimate of the predictive relevance of structural regression equations. Redundancy is the average variance of the manifest variable set, related to the endogenous construct, and explained by the exogenous constructs. Redundancy is a cross-validated R-square between the manifest variables of an endogenous construct and all the manifest variables associated with the constructs explaining the endogenous construct, using the estimated structural model. If the redundancy index is higher than zero, the index indicates predictive relevance. Negative values, on the other hand, imply the rejection of related structural equations (Fornell & Cha, 1994). The Q^2 values are obtained using the bindfolding procedure available in SmartPLS (Tenenhaus et al., 2005). According to Ringle et al. (2005), the value of the Stone-Geisser criterion Q^2 is displayed under the heading 'Construct/Indicator Cross-validated Redundancy' in SmartPLS. Table 5.40 lists the quality criteria for the evaluation of the structural model as implemented in the SmartPLS application (Chin, 1998; Cohen, 1988).

Table 5.40: Quality Criteria of Structural Model

Test	Measure	Cut-off
Goodness-of-fit measures	Share of Variance Explained (R^2)	Threshold ≥ 0.1
		0.10 - 0.32 (weak)
		0.33 – 0.66 (moderate)
		≥ 0.67 (substantial)
	Path coefficients (β)	< 0.1 (no relationship)
		0.1 – 0.2 (weak)
		0.2 – 0.5 (moderate)
		> 0.5 (substantial)
	Statistical significance level (p value)	< 0.05 (significant)
Validation measures	Effect size (f^2)	0.02 – 0.15 (small)
		0.15 – 0.35 (moderate)
		≥ 0.35 (large)
	Prediction Accuracy - Stone-Geisser criterion (Q^2)	Threshold > 0

5.4.2.1 Quality of Structural Model

Figure 5.9 summarises the various structural regressions of 'business value' in the research model. Table 5.41 presents the same PLS estimation of the research model in table format. In the figure, the path coefficients are the standardized regression coefficients (β). The explained variance (R^2) is also presented. In addition, the significance levels (p) of the regression coefficients were computed using a cross-validation method available online. The path loadings were taken to be statistically significant with a p value lower than 0.05 (the highest probability generally considered)(Burns, 2000). By adopting the threshold of 0.05, this study accepts that there is a 5 per cent possibility that the result occurred by chance.

Since the case values of constructs are determined by weight relations, structural prediction may be assessed by looking at usual R^2. A high R^2 demonstrates a good prediction power. As shown in the figure, the explained variance (R^2) of 'business value' is 0.586. That means the research model explains 58.6% of the variance in the dependent variable and is deemed satisfactory (Chin, 1998). The investigation of R^2 indicates that the research model has substantial explanatory power.

Figure 5.9: Path Analysis Model – Total Sample

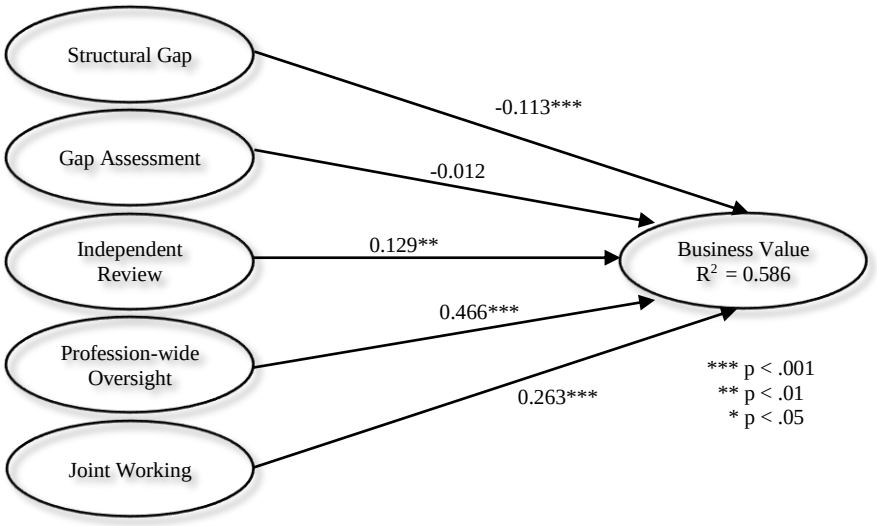


Table 5.41: Path Coefficient – Total Sample

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Value (Two-tailed)	P Value (One-tailed)
Gap Assessment -> Business Value	-0.012	-0.009	0.044	0.044	0.274	0.784	0.392
Independent Review -> Business Value	0.129	0.128	0.051	0.051	2.513	0.013	0.006
Joint Working -> Business Value	0.263	0.265	0.048	0.048	5.492	0.000	0.000
Profession-wide Oversight -> Business Value	0.466	0.463	0.056	0.056	8.248	0.000	0.000
Structural Gap -> Business Value	-0.113	-0.114	0.026	0.026	4.284	0.000	0.000

Four constructs have statistically significant relationships to 'business value': 'independent review' has a statistically significant ($\beta = 0.129$, $p = 0.006$) positive moderate correlation with 'business value'; 'joint working' has a statistically significant ($\beta = 0.263$, $p < 0.001$) positive

moderate correlation with ‘business value’; ‘profession-wide oversight’ has a statistically significant ($\beta = 0.466$, $p < 0.001$) positive moderate correlation with ‘business value’; and ‘structural gap’ has a negative weak relationship with ‘business value’ ($\beta = -0.113$, $p < 0.001$). Only the construct ‘gap assessment’ does not have statistically significant effect on ‘business value’ ($\beta = -0.012$, $p = 0.392$). The ‘gap assessment’ construct is problematic mostly because the correlation and weight between ‘business value’ have different signs (positive loading and negative correlation). The removal of the construct of ‘gap assessment’ does not weaken the explanatory power of the model (Table 5.42). In fact, the explained variance of ‘business value’ stays the same when the construct is removed from the model.

Table 5.42: Effect Size of Exogenous Constructs

	R^2 included	R^2 excluded	f^2
Gap Assessment	0.586	0.586	0.00
Independent Review	0.586	0.579	0.02
Joint Working	0.586	0.551	0.08
Profession-wide Oversight	0.586	0.526	0.14
Structural Gap	0.586	0.574	0.03

Table 5.42 presents the exogenous constructs and the effect sizes (f^2) computed for them in the research model. All the effect sizes are higher than 0.02, except ‘gap assessment’. On the other hand, only the construct ‘profession-wide oversight’ ($f^2 = 0.14$) has an almost medium impact on $R^2 = 0.586$. The research model seems to equalize the impact of the different constructs on R^2 values of ‘business value’ because none of the constructs has a considerably higher effect size compared to other ones. The most notable result of this analysis is that ‘profession-wide oversight’ would appear to be the most important determinant of ‘business value’.

Table 5.43: Indicator Crossvalidated Redundancy (Q^2)

Indicator	Q^2	Indicator	Q^2	Indicator	Q^2	Indicator	Q^2
BVP1	0.370	BVP9	0.391	IR4	0.645	POA2	0.559
BVP2	0.445	BVP10	0.477	JW1	0.566	POA3	0.511
BVP3	0.443	GA1	0.719	JW2	0.648	POA4	0.565
BVP4	0.439	GA2	0.694	JW3	0.697	POB1	0.390
BVP5	0.468	GA3	0.685	JW4	0.595	POB2	0.287
BVP6	0.261	IR1	0.426	JW5	0.660	POB3	0.389
BVP7	0.430	IR2	0.338	JW6	0.452	POB4	0.387
BVP8	0.422	IR3	0.679	POA1	0.619	SG1	0.000

Table 5.44: Construct Crossvalidated Redundancy (Q^2)

Indicator	Q^2
Business Value	0.414

As shown in Table 5.43 all indicators have a cross-validated redundancy (i.e. Q^2) exceeding the minimum level of zero, except structural gap (SG1). The remaining variables have moderate to significant predictive relevance. The ‘business value’ construct has a Q^2 value of 0.414 which indicates a substantial level of predictive relevance (Table 5.44).

Although the sample size is deemed adequate using the '10 times' rule of thumb, a statistical power analysis is needed to formally determine if the sample size is adequate (Peng & Lai, 2012). A post hoc power analysis was conducted using the post hoc statistical power calculator for multiple regression[11]. The sample size of 205 was used for the statistical power analyses and a 5 predictor variable equation was used as a baseline. The alpha level used for this analysis was $p < 0.05$. The post hoc analyses revealed the statistical power for this study exceeded 0.99. Thus, there was more than adequate power (i.e., power > 0.80). In general, the model shows satisfying levels of evaluation criteria across both its measurement and structural model. Hence, the model and its relationships are considered valid.

5.4.3 Summary Results – Assessment of Business Value of IT

Table 5.45 presents the result of hypotheses testing, as outlined in the previous section. The criteria for 'support' is strictly path coefficients >= ± 0.10 and P(t) <= 0.05. Four hypotheses (H6a, H7a, H7b, & H7c) are supported and one hypothesis (H6b) is not supported. The second research question associated with these hypotheses is reviewed in section 5.4.5.

Table 5.45: Summary Hypotheses Testing for IT Governance Structural Gap and Monitoring Mechanism

IT Governance Structural Gap		
Hypothesis	**Description**	**All Sample n = 205**
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support
Monitoring Mechanism		
Hypothesis	**Description**	**All Sample n = 205**
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support

5.4.4 Post Hoc Analysis – Business Value of IT

From the PLS model, the following post hoc tests seek to empirically answer three questions: First, while the IT shared services business model is evolving, the actual responsibilities and accountabilities vary in magnitude and complexity, accordingly. Shared services provider and client may develop different approaches to expectation or risk appetite. *Is there any experience or perception difference between provider and client in how IT structural gap and monitoring mechanisms influence the business value of IT?* Second, with recent increases in demand for cost

[11] The calculator is available on http://www.danielsoper.com/statcalc3/calc.aspx?id=9.

reduction, the need for small businesses to actively manage their IT resources has never been greater (Leyer & Quigley, 2009). Small organisations differ from large organisations in the number of staff, annual budget, number of customers, and amount of hardware and software. *Is there any difference in the business value of IT impacted by IT governance structural gap and monitoring mechanisms between small organisations and large organisations?* Third, different shared services delivery arrangements have different targeted levels of business process integration and standardisation for delivering IT services to customers. *Do IT governance structural gap and monitoring mechanisms affect the business value of IT differently among shared services delivery arrangements?*

To estimate the influence of the above factors on the path coefficients, this study uses the method of group comparison. Carte & Russell (2003) point out that a valid comparison requires a comparability of constructs. As the structural equation models are estimated for the different groups separately, different construct values for the same constructs could result. The resulting path coefficient differences either can result from a different indicator weight structure or are related to other objective reasons in the two groups. Therefore, the group comparison method requires a similar construct structure. The two subgroups incorporated in the group comparison can also be understood as two separate samples from different relationship or organisation size.

This study takes a three-step approach to group comparisons. First, the reliability and validity of the individual measurement models is determined. In addition, the structural models are evaluated separately. Second, the comparability of the separate models is evaluated. Finally, the path coefficients are assessed for significant differences.

5.4.4.1 Shared Services Relationship

The initial step ensures that both the measurement and the structural model allow valid interpretations (in line with the assessment for stand-alone models). The provider and client reflective constructs meet all the criteria during their assessment with regard to measurement reliability. All other indicators show loadings above the threshold of 0.6, except ‘POB2’ in the provider and ‘POB1’ in the client models. Consistency measures such as Cronbach’s alpha, internal consistency and AVE confirm measurement reliability in both sub-models. In addition, both reflective measurement models show discriminant validity on both the indicator and construct levels, except ‘profession-wide oversight’. Together with the findings in Chapter 5.4.1.4 that assess the content of the constructs, the reflective measurement models are assumed both valid and reliable (Appendix E). Hence, the constructs in both subgroups can be evaluated further during the group comparisons.

Both structural sub-models meet all the criteria during their quality assessment. In comparison to the overall model, the coefficient of determination (R^2) for the provider group increases to 69.5% and R^2 for the client group decreases to 45.4%. Both models have a sufficient level of prognostic relevance (Q^2) well above 0.

The second step in a group comparison determines if the constructs between the subgroups are actually comparable. Both reflective measurement models show a satisfying coefficient comparability (CoC) of 0.99. Hence, the indicator loading structure between the constructs of both models can be assumed as being nearly identical.

This study attempts to enrich the conceptual discussion by combining the causal ('business value' consequences) with a descriptive analysis. The combination of both is expected to deliver valuable insights into the application of assessment and monitoring mechanisms. During the third step, the path coefficients of both models are evaluated for significant differences. The comparison of the path coefficients is conducted by using the t-test as documented by Keil et al. (2000). The path coefficients show significant differences between provider and client. To determine the difference in construct between the two groups, the average indicator values are aggregated into one construct value per latent variable. The construct's mean values are then compared for significant differences using a t-test. The constructs of 'independent review', 'joint working' and 'profession-wide oversight' show significant differences between provider and client groups. The construct values of client are found to be significantly lower than the construct values of provider. Figure 5.10 presents the various structural regressions of 'business value' in the provider and client groups respectively. The results are also summarised in Table 5.46.

Figure 5.10: Path Analysis Model – Shared Services Relationship

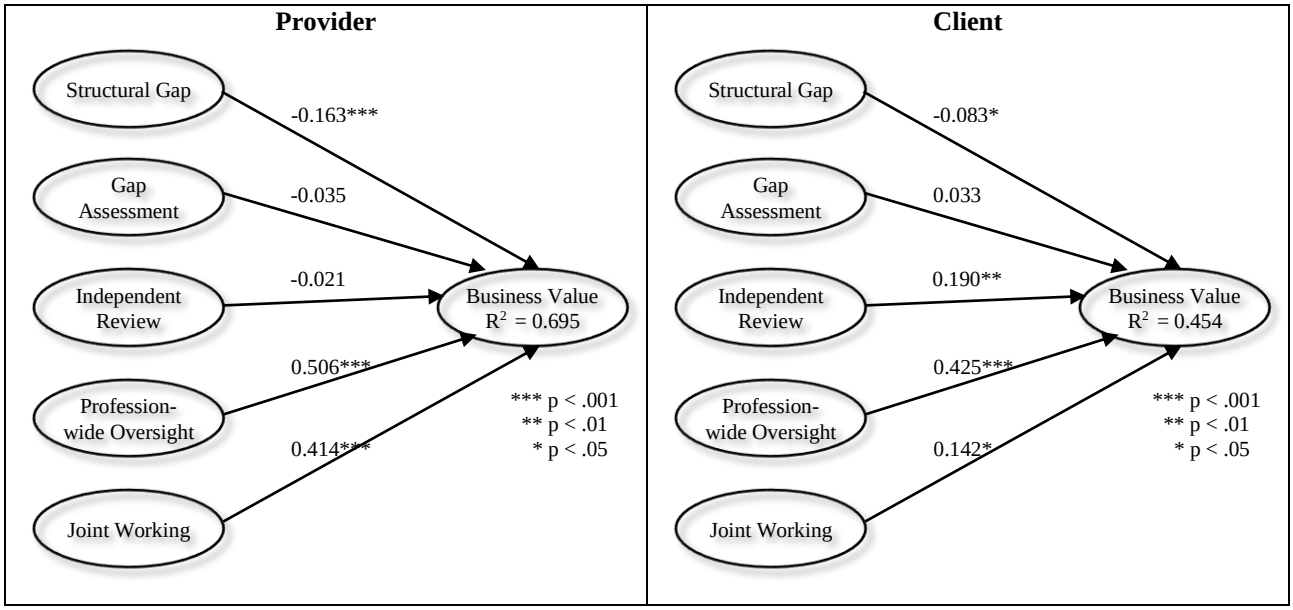


Table 5.46: Results Group Comparison – Shared Services Relationship

Provider n = 109 Client n = 96	Construct Values			Path Coefficients		
	Provider	Client	Difference	Provider	Client	Difference
Gap Assessment	2.440	2.253	-0.187	-0.035(ns)	0.033(ns)	na
Independent Review	5.174	4.103	-1.071***	-0.021(ns)	0.190**	na
Joint Working	5.628	5.240	-0.388*	0.414***	0.142*	-0.272***
Profession-wide Oversight	3.671	3.255	-0.415***	0.506***	0.425***	-0.081***
Structural Gap	0.106	0.123	0.018	-0.163***	-0.083*	0.080**

Significance - *** = < .001; ** = < .01; * = < .05; ns = not significant; na = not comparable

Table 5.47 presents the result of hypotheses testing, as outlined in the previous section. The criteria for 'support' is strictly path coefficients >= ± 0.10 and P(t) <= 0.05.

Table 5.47: Summary Hypotheses Testing for Group Comparison – Shared Services Relationship

IT Governance Structural Gap				
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**	
			Provider n = 109	**Client n = 96**
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	Support	Support	Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support	No Support	No Support
Monitoring Mechanism				
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**	
			Provider n = 109	**Client n = 96**
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support	No Support	Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support	Support	Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support	Support	Support

5.4.4.2 Organisation Size

The comparison of organisation size begins with the assessment of the individual measurement models. Within the large group measurement model, all indicators (GA1, GA2 & GA3) from the construct of 'gap assessment' are below the threshold of 0.6. Both 'gap assessment' and 'profession-wide oversight' indicators show insufficient loadings. The requirements for discriminant validity on both construct and indicator levels also do not meet the criteria. In addition, the composite reliability and AVE measures from the construct of 'gap assessment' are inadequate. However, the internal consistency indices show levels well above 0.7. Within the small group measurement model, four indicators from the construct of 'profession-wide oversight' (POB1, POB2, POB3, & POB4) are below the threshold of 0.6. Such results might be due to small organisations are less likely to use certified IT governance frameworks or evaluate industrial standard benchmarks. The requirement for discriminant validity on both groups' constructs is met. Except 'profession-wide oversight', the indicator levels of both groups are also met. In essence, the measurement models do not show sufficient levels in some evaluation criteria, therefore, the

predictions from the structure models may not be accurate. The evaluation criteria for company size are summarised in Appendix E.

Both structural models meet all the criteria in relation to their explanatory value (R^2) and prognostic relevance (Q^2): they are able to explain between 76.8% (large organisations) and 33.8% (small organisations) of the overall variance of business value performance (Figure 5.11). Q^2 of both models is well above 0 which suggests that the models actually have a prognostic effect. The comparability of both measurement models is ensured as well. Both reflective constructs are highly consistent in terms of their indicator loadings structure (CoCs 0.99). The comparison of path coefficients shows that the performance effect of 'joint working' increases significantly with decreasing organisation size (Table 5.48). As the organisation size decreases, diversity decreases and less resources for problem solving are required. Hence, impeding communication, cooperation and making consensus less difficult to reach (Chenhall, 2003). In particular, both 'independent review' and 'structural gap' have no 'business value' effect in small organisations. The possible explanation could be that bureaucracy decreases when organisational size decreases, thereby decreases the difficulties in monitoring shared services performance. The use of 'independent review' becomes unnecessary. In addition to the reduction of complexity, small organisations tend to have a less IT governance structural gap between decision rights and accountability. In contrast, 'profession-wide oversight' decreases significantly with smaller organisation size.

In line with shared services relationship, a descriptive analysis was conducted to determine construct value patterns in organisation size. The descriptive analysis shows that the means of all constructs decrease with reducing organisation size. In other words, larger organisations in the sample use more monitoring controls. However, structural gap is less likely to be affected by organisation size.

Figure 5.11: Path Analysis Model – Organisation Size

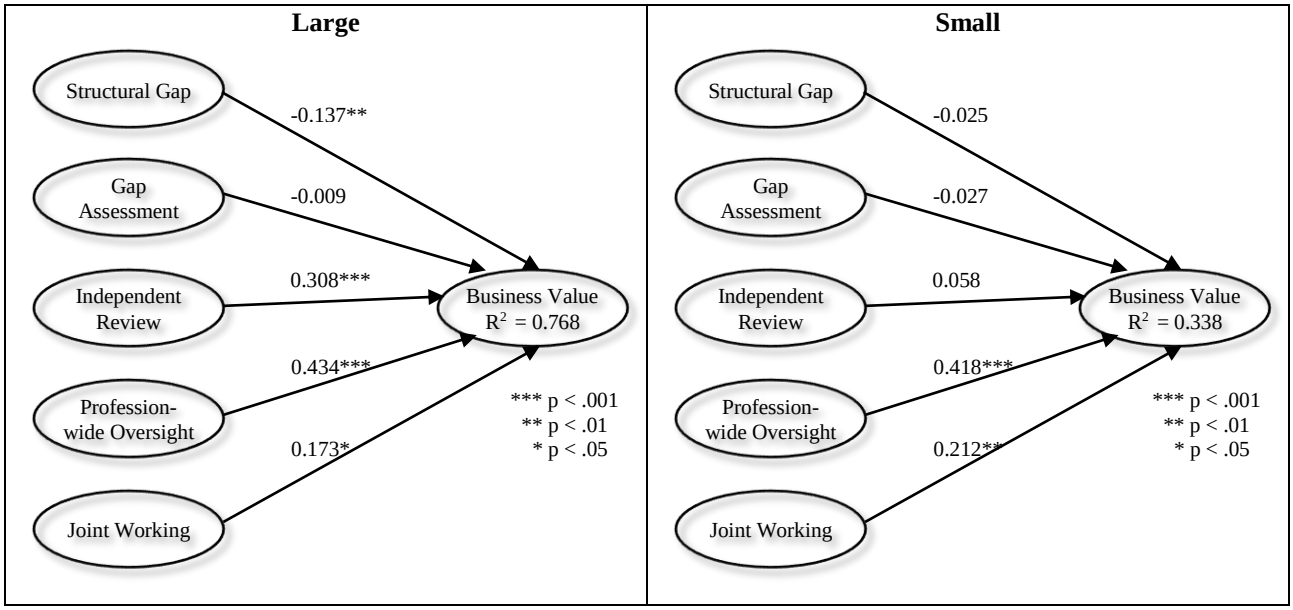


Table 5.48: Results Group Comparison – Organisation Size

Large n = 108 Small n = 97	Construct Values			Path Coefficients		
	Large	Small	Difference	Large	Small	Difference
Gap Assessment	2.600	2.077	-0.523***	-0.009(ns)	-0.027(ns)	na
Independent Review	5.432	3.827	-1.606***	0.308***	0.058(ns)	na
Joint Working	5.569	5.308	-0.261*	0.173*	0.212**	0.039***
Profession-wide Oversight	3.786	3.131	-0.655***	0.434***	0.418***	-0.016***
Structural Gap	0.131	0.094	-0.038	-0.137**	-0.025(ns)	na

Significance - *** = < .001; ** = < .01; * = < .05; ns = not significant; na = not comparable

Table 5.49 presents the result of hypotheses testing, as outlined in the previous section. The criteria for 'support' is strictly path coefficients >= ± 0.10 and P(t) <= 0.05.

Table 5.49: Summary Hypotheses Testing for Group Comparison – Organisation Size

IT Governance Structural Gap				
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**	
			Large n = 108	**Small n = 97**
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	Support	Support	No Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support	No Support	No Support
Monitoring Mechanism				
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**	
			Large n = 108	**Small n = 97**
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support	Support	No Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support	Support	Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support	Support	Support

5.4.4.3 Profession-wide Oversight - Shared Services Relationship

According to the path analysis model, 'profession-wide oversight' appears to be the most important determinant of 'business value' (Figure 5.9). The comparison of path coefficients also shows that the performance effect of 'profession-wide oversight' differs significantly between provider and client groups within shared services relationship (Figure 5.10) and large and small groups within organisation size (Figure 5.11). To evaluate how this monitoring mechanism is utilised to control the shared services performance, the 'profession-oversight' construct was divided into two subgroups: benchmarking (POA1, POA2, POA3, POA4)[12] and best practice framework (POB1, POB2, POB3, POB4)[13]. Profession-wide oversight involves the systematic application of IT

[12] Benchmarking:
POA1 - 'cost' targets against standards of best-practice.
POA2 - 'quality' targets against standards of best-practice.
POA3 - 'customer satisfaction' targets against standards of best-practice.
POA4 - 'timeliness' targets against standards of best-practice.
[13] Best-practice framework:
POB1 - Control Objectives for Information and related Technology (COBIT)
POB2 - Information Technology Infrastructure Library (ITIL)
POB3 - Information Security Management (ISO 27002)
POB4 - Quality Management (ISO 9000)

rules, standards, or principles developed from research and the actual practices of and incidents experienced by major organisations. Benchmarking control refers to comparing performance to industry standards and competitors, including cost, quality, customer satisfaction, and timelines. Best practice framework refers to the most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures that have proven themselves over time for large numbers of people or organisations, including ITIL, ISO, COBIT. Results from these post-hoc analyses are provided in Table 5.50 and Table 5.51.

In particular, the performance of 'best practice framework' decreases from a medium effect level in client group ($\beta = 0.294$, $p < .05$) to no effect in provider group. The 'business value' is also directly related to 'benchmarking' in both client group ($\beta = 0.287$, $p < .005$) and provider group ($\beta = 0.466$, $p < .005$). The relationship between client and provider, however, differs significantly by 0.180. The descriptive analysis shows that the means of the 'benchmarking' group are well above 'best practice framework' means. In other words, the provider group in the sample uses less best practice frameworks and relies more on benchmarking in monitoring the shared IT performance.

Table 5.50: Results Profession-wide Oversight Comparison – Shared Services Relationship

Provider n = 109 Client n = 96	Construct Values			Path Coefficients		
Profession-wide Oversight	Provider	Client	Difference	Provider	Client	Difference
- Benchmarking	5.257	4.805	0.452*	0.466***	0.287***	-0.180***
- Best Practice Framework	2.062	1.695	0.367***	0.093(ns)	0.235***	0.142(na)

Significance - *** = < .005; ** = < .01; * = < .05; ns = not significant; na = not comparable

Benchmarking is a proven tool for improving efficiency and reducing operating costs in shared services (Accenture, 2011b). Using common or industry key indicators for the IT service, such as cost, quality, time, and customer satisfaction, an organisation can compare its indicators against the indicators for leading organisations providing the same IT service. This study indicates benchmarking is a popular and effective monitoring mechanism. The service providers might support benchmarking as a way to 'prove' to their clients that they are competitive (Pattacini, 2013).

From a provider perspective, the adoption of best practice framework has no impact on business value of IT. Based on a recent analysis of client engagements, a consulting firm found that frameworks such as ITIL and COBIT are often implemented by the service provider in isolation from the business, simply to achieve a certain level of compliance (Compass, 2011). In such cases, the business may not be sufficiently engaged and clients may not feel enough of a sense of ownership and accountability in the initiative for it to be successful.

From a client perspective, both benchmarking and best practice frameworks have positive impacts on the shared IT performance. IT best practices have become significant to the client because of the constant preoccupation over the generally increasing level of IT expenditure and over the increasingly complex IT-related risks, such as network security (Selig, 2008). The effective

use of best practices can also avoid reinventing their own policies and procedures, optimize the use of IT resources and reduce the occurrence of major IT risks. Potential shared IT risks include project failures, wasted investments, security breaches, system crashes and failures by service providers to understand and meet customer requirements.

5.4.4.4 Profession-wide Oversight – Organisation Size

Comparing standardized beta coefficients from the two organisation size subgroups – large and small, it appears that the influence of 'benchmarking' is significant in both large (β = 0.451, $p < .005$) and small ($\beta = 0.282$, $p < .005$) organisations. Furthermore, the shared IT performance also directly relates to 'best practice framework' ($\beta = 0.241$, $p < 0.005$) in small organisations. However, 'best practice framework' does not predict the business value of IT in large organisations. A descriptive analysis of the data reveals that the extents of 'benchmarking' and 'best practice framework' usage differ significantly between two groups. The usage of 'benchmarking' is higher than 'best practice framework' in both groups.

Table 5.51: Results Profession-wide Oversight Comparison – Organisation Size

Large n = 108 Small n = 97		Construct Values			Path Coefficients	
Profession-wide Oversight	Large	Small	Difference	Large	Small	Difference
- Benchmarking	5.368	4.686	0.682***	0.451***	0.282***	0.169***
- Best Practice Framework	2.183	1.564	0.619***	0.076(ns)	0.241***	na

Significance - *** = < .005; ** = < .01; * = < .05; ns = not significant; na = not comparable

There is a very clear tendency for larger organisations to be more likely to be benchmarking than smaller organisations. Furthermore, the influence of benchmarking on large organisations seems to be higher than small organisations. This difference might reflect a familiar combination of lack of organisational slack (in terms of time and/or resources) coupled with a healthy suspicion of management 'theory' resulting in a reduced likelihood of smaller organisations being involved with benchmarking. The propensity for conglomerates/federations to want to know how different parts compare may be one reason why benchmarking has the highest impact on shared IT performance.

The findings regarding the adoption of best practice framework in large organisation are unexpected. The possible explanation could be that technology is ever changing at an accelerating pace. It is also frequent that process simplification and new security threats result in the requirement of continuously updating the best practice frameworks. The change management could be more complex in large organisations. The IT governance challenge might also be an obstacle to the implementation of best practice frameworks because of the complex alignment requirement among multiple stakeholders in a shared services environment.

5.4.4.5 Shared Services Delivery Arrangement

Not all the five PLS measurement models of shared services delivery arrangements allow valid interpretations for group comparison due to varied sample sizes, e.g., only 15 in the 'iso-corporate' subgroup. Therefore, correlational analysis using Pearson's correlation coefficient (r) was used to examine the relationships between business value with IT governance structural gap and monitoring mechanisms respectively (Table 5.53). Evans (1996) suggests for the absolute value of r to describe the strength of the correlation according to the following criteria: 0.00 - 0.19 = very weak; 0.20 - 0.39 = weak; 0.40 - 0.59 = moderate; 0.60 - 0.79 = strong; and 0.80 - 1.0 = very strong.

For 'intra-services' organisations (n = 43), results indicate no correlation between 'business value' and 'structural gap', and "business value" and 'gap assessment'. A weak positive correlation between 'independent review' and 'business value' ($r = 0.398$, $p = 0.008$) indicates that as the level of active monitoring roles being played by independent professionals increases, the business value generated from IT increases. A significant moderate positive correlation between 'profession-wide oversight' and 'business value' ($r = 0.577$, $p < 0.001$) indicates that as the adoption of profession-wide well-defined standards of work increases, the business value generated from IT increases. A significant moderate positive correlation between 'joint working' and 'business value' ($r = 0.409$, $p = 0.007$) indicates that as the level of active involvement of the clients in the joint production of service product increases, the business value generated from IT increases. The results indicate that the IT governance structural gap is unlikely to affect the business value generated from IT. However, the implementation of monitoring mechanisms is more likely to contribute effectively to the shared services performance.

For 'service' organisations (n = 25), results indicate no correlation between 'structural gap', 'gap assessment' and 'business value' respectively. There is a moderate, positive significant correlation between 'Independent review' and 'business value' ($r = 0.461$, $p = 0.020$). There is strong, positive significant correlation between 'profession-wide oversight' and 'business value' ($r = 0.805$, $p < 0.001$). The correlation between 'joint working' and 'business value' is found to be moderate significant ($r = 0.580$, $p = 0.002$). The results reveal that the IT governance structural gap is unlikely to affect the business value generated from IT. However, the implementation of monitoring mechanisms is likely to contribute effectively to the shared services performance, particularly the adoption of benchmarking.

For 'corporate' organisations (n = 100), no significant correlation is found between 'structural gap', 'gap assessment' and 'business value'. There are moderate significant correlations between 'independent review' ($r = 0.565$, $p < 0.001$), 'profession-wide oversight' ($r = 0.669$, $p < 0.001$), 'joint working' ($r = 0.617$, $p < 0.001$) and 'business value' respectively. The results imply that the

IT governance structural gap is unlikely to affect the business value generated from IT. However, the implementation of monitoring mechanisms is likely to contribute effectively to the shared services performance.

For 'supra-corporate' organisations (n = 22), no significant correlation is found between 'structural gap', 'gap assessment' and 'business value'. The correlations between 'independent review' and 'business value' is moderate and significant ($r = 0.746$, $p < 0.001$), 'profession-wide oversight' and 'business value' is strong and significant ($r = 0.804$, $p < 0.001$), 'joint working' and 'business value' is moderate and significant ($r = 0.715$, $p < 0.001$). The results reveal that the IT governance structural gap is unlikely to affect the business value generated from IT. Comparing with other shared services delivery arrangements, the implementation of monitoring mechanisms is more likely to contribute effectively to the shared services performance.

For 'iso-corporate' organisations (n = 15), no significant correlation is found between 'structural gap', 'gap assessment' and 'business value'. Moderate significant correlations are found between 'independent review' and 'business value' ($r = 0.778$, $p = 0.001$), and 'profession-wide oversight' and 'business value' ($r = 0.704$, $p < 0.001$) respectively. Within 'profession-wide oversight', there is no correlation between 'best practice framework' and 'business value'. However, 'joint working' and 'business value' correlate strongly and significantly ($r = 0.823$, $p < 0.001$). The results indicate that the IT governance structural gap is unlikely to affect the business value generated from IT. However, the implementation of monitoring mechanisms is likely to contribute effectively to the shared services performance, except the adoption of best practice framework. The possible explanation could be that the 'iso-corporate' organisations focus more on competitiveness; thereby the adoption of benchmarking seems to be more effective than best practice framework in demonstrating the business value generated from IT shared services.

Table 5.52: Pearson Correlations (Level Of Significance) of Business Value

Shared Services Delivery Arrange't	Business Value	H6a Structural Gap	H6b Gap Assessment	H7a Independent Review	H7b Profession-wide Oversight	H7b-1 Bench-marking	H7b-2 Best Practice Framework	H7c Joint Working
Intra-service	Pearson Correlation	-.133	.129	.398**	.577**	.494**	.394**	.409**
	Sig. (2-tailed)	.395	.410	.008	.000	.001	.009	.007
	N	43	43	43	43	43	43	43
Service	Pearson Correlation	-.312	.133	.461*	.805**	.768**	.580**	.757**
	Sig. (2-tailed)	.129	.528	.020	.000	.000	.002	.000
	N	25	25	25	25	25	25	25
Corporate	Pearson Correlation	-.157	-.026	.565**	.669**	.674**	.444**	.617**
	Sig. (2-tailed)	.119	.800	.000	.000	.000	.000	.000
	N	100	100	100	100	100	100	100
Supra-Corporate	Pearson Correlation	.013	.368	.746**	.804**	.754**	.666**	.715**
	Sig. (2-tailed)	.953	.092	.000	.000	.000	.001	.000
	N	22	22	22	22	22	22	22
Iso-Corporate	Pearson Correlation	.313	-.101	.778**	.704**	.752**	.270	.823**
	Sig. (2-tailed)	.256	.721	.001	.003	.001	.330	.000
	N	15	15	15	15	15	15	15

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

To sum up, the comparison of the Pearson's correlation coefficient among five shared services delivery arrangements exhibits no differences in the relationships between the dependent variables and independent variable, except 'best practice framework' in 'iso-corporate'. In relation to the performance effects of monitoring mechanism, increased levels of 'independent review', 'profession-wide oversight' and 'joint working' have positive impacts on 'business value'. The performance effects of IT governance structural gap are not impacted by increased levels of 'structural gap' and 'gap assessment'. The summary hypotheses testing are shown in Table 5.53.

Table 5.53: Summary Hypothesis Testing for Group Comparison – Shared Services Delivery Arrangement

IT Governance Structural Gap						
Hypothesis	**Description**	**Group Comparison**				
		Intra-service n = 43	**Service n = 25**	**Corporate n = 100**	**Supra-Corporate n = 22**	**Iso-Corporate n = 15**
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	No Support	No Support	No Support	No Support	No Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support	No Support	No Support	No Support	No Support
Monitoring Mechanisms						
Hypothesis	**Description**	**Group Comparison**				
		Intra-service n = 43	**Service n = 25**	**Corporate n = 100**	**Supra-Corporate n = 22**	**Iso-Corporate n = 15**
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support	Support	Support	Support	Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support	Support	Support	Support	Support
	• Higher levels of benchmarking adoption are associated with higher levels of IT-business value.	Support	Support	Support	Support	Support
	• Higher levels of best practice framework adoption are associated with higher levels of IT-business value.	Support	Support	Support	Support	No Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support	Support	Support	Support	Support

Hypothesis 6a is not supported by both Pearson's correlation analysis and PLS model, Hypothesis 6b is not supported by the Pearson's correlation analysis, but is confirmed by the PLS model. Pragmatically, Pearson's correlation coefficient is sensitive to skewed distributions. It seems that PLS is a better interpretable model than the correlational analysis for this study. In line with the PLS model, hypotheses 7a, 7b, and 7c are confirmed in all subgroups. However, no relationship is found between 'best practice framework' and 'business value' in the 'iso-corporate' organisations which are characterised by profit centre and external customer. To achieve competitive advantage, the 'iso-corporate' organisations are likely to focus more on benchmarking than on best practice frameworks, such as COBIT.

5.4.5 Review of Research Question Two – Business Value of IT

This study predicts in hypotheses H6 that lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value. Organisations with effective IT governance actively recognise and assess their IT governance structural gap. In addition, hypothesis H7 predicts that monitoring mechanisms should be defined to ensure the business value generated from IT. Table 5.54 presents the consolidated results of hypotheses testing as outlined in the previous sections. The criteria for 'support' are strictly path coefficients >= ± 0.10 and P(t) <= 0.05. The second research question is explicitly consolidated and reviewed as follows:

Table 5.54: Consolidated Hypotheses Testing for IT Governance Structural Gap and Monitoring Mechanism

IT Governance Structural Gap						
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**			
			Provider n = 109	**Client n = 96**	**Large n = 108**	**Small n = 97**
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	Support	Support	Support	Support	No Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support	No Support	No Support	No Support	No Support
Monitoring Mechanism						
Hypothesis	**Description**	**All Sample n = 205**	**Group Comparison**			
			Provider n = 109	**Client n = 96**	**Large n = 108**	**Small n = 97**
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support	No Support	Support	Support	No Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support	Support	Support	Support	Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support	Support	Support	Support	Support

5.4.5.1 Presence of IT Governance Structural Gap – Decision Rights vs Accountability

As discussed above, the PLS result indicates the presence of IT governance structural gap has a significant negative relationship with business value of IT. H6a is supported. This study defines accountability as the extent to which groups are held responsible for the outcome of decisions. According to Gray et al. (1996), the accountability concept entails 'the duty to provide an account (by no means necessarily a financial account) or reckoning of those actions for which one is held responsible". Gray et al. (1996) further assert that accountability renders two types of responsibility, namely responsibility for actions (e.g., implementation of enterprise resource planning ERP application) and responsibility to report (e.g., realisation of business benefits from enterprise resource planning ERP investment).

Various management roles, such as top management, are used to understand the decision rights vs accountability gaps and several observations are made from the analysis. In this study, responses were captured for each group's management role in each decision area (in percentage terms). For example, decision rights for decisions of IT principle could be distributed across the five groups, with the total equalling 100. A respondent could indicate that top management has 50% of the rights, and business unit leader has 50% (that is, decision rights are shared). A similar percentage response was solicited for accountability of outcomes. Table 5.55 illustrates the IT governance structural gaps between decision rights and accountability (average differences), with the negative numbers indicating where accountability exceeds decision rights.

Table 5.55: Decision Rights vs Accountability Gap by Management Role and IT Decision Domain

IT Decision Domain	Top Management	Business Unit Leaders	Business Process Owners	Local IT Unit Leaders	IT Executives – Shared Services
IT Principles	1.61	0.20	0.08	-1.18	-0.71
IT Investment	3.48	-2.00	0.83	-1.43	-0.88
Business Application Needs	-0.02	-1.08	0.74	0.30	0.06
IT Architecture	0.55	-0.69	0.63	-0.94	0.45
IT Infrastructure	1.66	-1.05	0.41	-1.28	0.26

As can be seen in the column under *business unit leaders* and *local IT unit leaders*, most numbers are negative indicating that these management leaders perceive an IT governance structural gap, where accountability for major IT decisions exceeds their decision rights. The *business process owners* column shows all numbers are positive. The business process owners are involved in making decisions in all decision areas but not accountable for all outcomes. A possible explanation could be the senior management level is typically responsible for leading lower level managers.

The last column indicates *IT executives – shared services* make major decisions in *business application needs, IT architecture*, and *IT infrastructure* but the accountability systems in these decision areas are weak. Such environments may often result in overspending on IT that may not yield commensurate business benefits (Grover et al., 2007). In some cases, this could result in frustration for business and local IT groups. Another observation relevant to a shared services environment is the negative gaps found in *IT principles* and *IT investment*. In the current economic climate, cost considerations often appear to be the dominant consideration in decisions, and the resulting IT assets may not be aligned with existing competencies (Frost & Sullivan, 2005). For example, the top business executive committee may deny an IT investment request for a new in-house scalable platform without full information about a situation (i.e., lack of specific IT knowledge). Instead, the top management may proceed to an outsourcing solution based upon an external vendor's aggressive proposal. In such situations, the provider may feel frustrated because they believe their skills are underutilised and opportunities are being lost. Frustration could also result from the lack of control over their asset base, and in some cases their future viability. In

addition, the blame often falls on IT when projects run into difficulties (Grover et al., 2007; Queensland Audit Office, 2010). These conflicts could be a possible explanation of why the perceived decision rights-accountability gap has more impact on the provider group than the client group as discussed in previous section and shown in Table 5.46.

This study reveals that the most common IT governance structure adopted is *business monarchy*. An interesting observation is made from Table 5.55 showing that most numbers in the *top management* column are positive. These gaps occur when major IT decisions are made by top management, but they are not held accountable for the outcomes of their executive decisions. As a result, the IT governance structural gap is detrimental to the business value. For example, top management might not acknowledge the full potential risks of (ERP) projects and approve the investment, or suddenly cancel them when they run into difficulties. Hence, the realisation of business value from investments in IT cannot be optimised.

5.4.5.2 Assessment of IT Governance Structural Gap

Planning an effective governance structure that recognises the decision rights and accountability differences is essential for an organisation to better deploy and manage the technology. In addition, this study predicts more formal and regular assessment of IT governance structural gap is associated with higher levels of IT-business value. Interestingly, the findings do not support the hypothesis H6b. A test for mediation was conducted to examine the association between 'structural gap' and 'gap assessment'. Nevertheless, it is important to note that this study cannot infer a causal relationship between these two variables through a correlation analysis. A potential explanation for this result could be that the IT governance assessment is not a mandatory practice. There is no single source of public disclosure where information on IT governance activities can be acquired (Joshi et al., 2013). The extent of formal and regular assessment of IT governance might depend on the unique corporate governance environment and reporting framework. Although the result appears to be not significant, it does not imply that the IT governance assessment is irrelevant from the perspective of good governance practice.

5.4.5.3 Monitoring Roles Being Played By Independent Professionals

Within an agency relationship, monitoring of the agent's actions is an option for the principal to reduce information asymmetry. This study recommends the practice of having competent, objective reviewers to evaluate the IT shared services operation. The findings support the association between the existence of monitoring roles being played by independent professionals and business value of IT. H7a is supported.

Because principals often lack the knowledge of the agents' operation needed to determine how much service is required and how much actually is performed, therefore, the principals may not be able to design mechanisms to limit post-opportunism. Also, they may be unable to design agreements in which agents' compensation is based on the outcome of efforts. This condition is less problematic, however, when the principals have sufficient knowledge about the service so as to be able to determine clearly their own objectives and to be able to judge the outcome of agents' efforts. The principals can lessen or even neutralize their vulnerability to agent opportunism by internalising specialised knowledge via the influencing role of IT performance and the peer review role of assessing shared IT performance. The ultimate goal of helping the reviewed provider is to improve its policy making, adopt best practices and comply with established standards and principles. It is important to note that the internalisation of relevant knowledge in practice is an acknowledgment of the problem arising from asymmetry of expertise.

Interestingly, the group comparison results do not show significant relationships in both provider and small organisations. A potential explanation could be that the provider might perceive independent review as a bureaucracy of duplicated effort and small organisations might not able to justify the cost effectiveness of having extra resource to oversee the shared IT operation.

5.4.5.4 Profession-Wide Well-Defined Standards of Work

The profession-wide bodies provide their members with best practice frameworks and/or benchmarking information, e.g., Information Systems Audit and Control Association (ISACA). This study confirms a positive significant relationship between the adoption of profession-wide well-defined standards of work and business value of IT. This association is also supported by different shared services relationship and organisation sizes. H7b is supported.

As agency theory suggests, the threat of harm to the provider’s general reputation is likely to influence professional agents' behaviour (Sharma, 1997). The principals can make their claims more credible than agents when any opportunistic behaviour can be advertised easily (inexpensively) and when principals themselves have a strong reputation. For example, the client can make a valid complaint to the top management or the Board if they are able to demonstrate the difference between a shared services charge and a benchmarked market price, i.e., it is cheaper to get the same service from external supplier. Moreover, there is a growing pressure on organisations to utilise benchmarking information and formalise controls to hold their providers accountable more effectively for shared IT activities and outcomes (Accenture, 2011b; Kouzmin et al., 1999). Social pressure from the business units might also result in preventing the provider from engaging in self-interested efforts to avoid competition, thereby the business value of IT can be ensured.

Scrutiny by professional peers neutralises the agent's advantage of unique access to an esoteric body of knowledge and exposes the behaviour of agents for comparison against the work and best practices or standards of their respective community of professionals. Such a condition is most likely to arise when there is a great deal of interaction and information sharing via intra-industry organisations, trade associations or professional bodies. In other words, social interaction and solidarity among principals is likely to make their claims more credible to one another. This engenders a healthy market for agents' reputations within the organisation or the principal's industry via best practices or standards accreditation. Even if agent reputations are built on perceptions and judgments of principals, as opposed to hard-to-measure behaviours and outcomes, the agents are likely to restrain their opportunistic inclinations when principals can easily share best practice information about their experiences with particular professionals or within the organisation. The information availability could contribute to a possible explanation why the adoption of best practice framework has a significant effect in the small organisations and the client group because social controls might be more cost effectiveness for them.

5.4.5.5 Joint Production of Service Product

This study examined the effect of active involvement of the clients in the joint production of the service product on the business value of IT. The findings show a significant relationship between the two variables. A further investigation also indicates the relationships are significant within all group comparisons of shared services relationship and organisation size. H7c is supported.

According to Chang and Taylor (1999), cultural control involves the indoctrination of agents into principles' values and interests. In this process of indoctrination goal congruence between the two parties is achieved which also means a reduced need for monitoring outcome and behaviour (Eisenhardt, 1989). As the reduction of agency costs is the underlying goal of all agency relationships, it needs to be taken into consideration that this reduction can be achieved by aligning the interests of the two parties. Ouchi (1980) affirms that common values and beliefs provide the harmony of interests that erase the possibility of opportunistic behaviour. Thus, the more the values and beliefs of provider and client are aligned through joint production of service product, the more likely the agency problem reduces, thereby making control mechanisms less necessary and business value increases.

Another issue to examine with regard to the need and cost of control mechanisms is trust. The use of personal integrating mechanisms, such as joint working, can establish a collaborative relationship between provider and client, leading both management to view their relationship as effective (Roth & Nigh, 1992). Thereby, the agency costs can be reduced. This finding indicates

that the trust and personal relationships between the individuals of the divergent business units and shared services unit become increasingly important to deliver the business value of IT (Accenture, 2007).

5.5 Chapter Summary

This chapter evaluated and reported the results of data analysis. After assessing the cross-tabulations, measurement and structural models, the previously developed hypotheses were tested with the data set. The Exact Test technique was used to confirm the relationships between IT governance structure and shared services delivery arrangement. The Partial Least Squares technique was used to determine direct effects of IT governance gap and monitoring mechanisms on business value of IT. Next chapter will discuss the implications and limitations of this research work as well as present selected ideas as to the future research work.

CHAPTER 6: DISCUSSION AND IMPLICATIONS

In the final chapter, the empirical results are presented and discussed in the light of previous research. Section 6.1 re-states the motivations, objectives, and research questions. Section 6.2 summarises the hypotheses together with the key findings of this study. Section 6.3 examines the potential limitations of the thesis and the techniques used to mitigate such limitations. Section 6.4 discusses the implications of the thesis for theory and practice before outlining suggestions for further research. Finally, section 6.5 concludes this chapter.

6.1 Summary of Research Objectives

While the adoption of IT governance by organisations has been an area of substantive research interest, research efforts to date have led to mixed and inconclusive outcomes. Moving to IT shared services means a fundamental change to an organisation's service delivery model. Not fully recognising the need for IT governance and understanding which type of IT governance mechanism is needed might result in the failure of the shared services operation (Janssen & Joha, 2007a). The diversity of key stakeholders makes IT shared services environment very complex and IT governance is still an unexplored domain. This thesis is motivated by the need to develop a conceptual framework and guide a comprehensive analysis to answer the following research questions:

1. *Given a particular type of IT shared services delivery arrangement, what should be the IT governance structure (decision rights) adopted within an organisation?*
2. *Are the decision rights and accountability allocated effectively? How does an organisation leverage IT governance practices to ensure desired business outcomes in a shared services environment?*

By incorporating aspects of the resource-based view of the firm (Barney, 1991) and agency theory (Jensen & Meckling, 1976), the research model examines three components, specifically IT governance structure (decision rights), IT governance structural gap, and monitoring mechanisms. The model was tested using data collected from an online survey.

6.2 Summary of Research Findings

6.2.1 IT Governance Structure (Decision Rights)

A precise typology of shared services delivery arrangements has been proposed by Tomkinson (2007, p.30). This research recognises each shared services delivery arrangement (e.g., intra-service, service, corporate, etc.) represents a different sourcing strategy and has a collection of

unique resources and capabilities. The IT decision-making structure is devised to accomplish IT activities and to support a client organisation's environmental and strategic imperatives (Maizlish & Handler, 2005; Standards Australia, 2005; Weill & Ross, 2004). This study proposed the selection of different governance structures for different IT decision domains (i.e., ranging from IT principles to IT infrastructure strategy) is dependent on the characteristics of IT resource and knowledge locations of participating in the shared services client and provider network (Janssen & Joha, 2007b).

A matrix that juxtaposes the five IT decision domains against five IT governance structural approaches is presented in Table 5.22. This study's results suggest that the most common structure is 'business monarchy' in all decision domains among 'intra-service', 'service' and 'iso-corporate' organisations. 'Corporate' organisations adopt 'federal' approaches in five IT decision areas. 'Supra-corporate' organisations use 'business monarchy' for defining business application needs and IT infrastructure and 'federal' for defining IT principles, IT investment and IT infrastructure. Contrary to the expectations, the IT decision framework has a more centralised structure as opposed to that discussed in Chapter 3. H1 to H5 are partially supported as shown in Table 6.1.

Table 6.1: Summary Research Findings for IT Governance Structure (Decision Rights)

Hypothesis	Description	All Sample n = 205
1a	An 'intra-service' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.	Support
1b	An 'intra-service' arrangement for making IT architecture and IT infrastructure decisions will adopt a feudal governance design.	No Support
2a	A 'service' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a business monarchy governance design.	Support
2b	A 'service' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT duopoly governance design.	No Support
3a	A 'corporate' arrangement for making IT principles and IT investment decisions will adopt a business monarchy governance design.	No Support
3b	A 'corporate' arrangement for making business application needs decisions will adopt a federal governance design.	Support
3c	A 'corporate' arrangement for making IT architecture decisions will adopt an IT duopoly governance design.	No Support
3d	A 'corporate' arrangement for making IT infrastructure decisions will adopt an IT monarchy governance design.	No Support
4a	A 'supra-corporate' arrangement for making IT principles decisions will adopt a business monarchy governance design.	No Support
4b	A 'supra-corporate' arrangement for making IT investment and business application needs decisions will adopt a federal monarchy governance design.	Partially Support
4c	A 'supra-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.	No Support
5a	An 'iso-corporate' arrangement for making IT principles, IT investment, and business application needs decisions will adopt a federal governance design.	No Support
5b	An 'iso-corporate' arrangement for making IT architecture and IT infrastructure decisions will adopt an IT monarchy governance design.	No Support

Extant literature discussed the predominant IT governance structure for shared services as a federal model that included shared responsibility and authority between corporate units and business/IT units, e.g., Weill & Ross (2004), p.64, figure 3-4. However, a growing collection of evidence indicates that IT decisions are made more centrally in the organisation than in the past

(Adams et al., 2007). For example, the prevailing thought is that technology and platform decisions (i.e., IT infrastructure and IT architecture) could be centralised because each business unit is unlikely to demand its own customised approach to hardware. Centralisation is beneficial as it creates efficiencies and standardisation in shared services. Meanwhile, with the degree of shared services increases, the federal approach still allows business units have their own discretion with respect to business requirements and the flexibility they need while providing the cost benefits of centralisation, e.g., 'corporate' organisations. In addition, there are several possible explanations for this result.

This study started with a set of IT resource classes derived from the knowledge base, e.g., Liang et al. (2010). These IT resources are further distinguished into three types to meet Wade and Hulland (2004)'s proposal: outside-in, spanning, and inside-out. This research assumes that outside-in and spanning IT resources will have a stronger impact than inside-out IT resources on competitive position. The IT resources were then mapped with the IT decision domains according to Weill and Ross (2004). However, a recent study reveals IT technological capabilities have significant effect on the competitive advantage. Surprisingly, these capabilities comprise 'hard' technological skills, which are often understood as a commodity and not as a possible source for creating a competitive advantage (Patas et al., 2012). Therefore, the findings may not support how different classes of IT resources affect competitive advantages and the associated IT governance structure. Thus, the assumption of IT resource characteristics (Appendix A) may not be valid.

Second, this study predicted when knowledge is valuable in decision-making; there are benefits to locate decision authority with the knowledge that is valuable to those decisions. However, the evidence does not support IT monarchies in making technical decisions, e.g., with regard to IT infrastructure. The possible explanation could be that the agency costs influence the allocation of decision rights. This study considers IT governance as an organisational problem of efficiently exchanging costly information (knowledge) (Jensen & Meckling, 1976). Organisational structures and processes, such as decision-making and monitoring, may be the mechanisms by which knowledge can be transferred between client and provider. Such knowledge transfer or exchange needs to be optimal not in the mathematical equilibrium sense but in the sense that excess transfer may be costly in terms of both cognitive overload and cost of exchange and result in a net negative benefits to the firm. Empirical findings confirm that a greater decentralisation of decision rights implies a greater need for monitoring (Brickley et al., 2003). Therefore, shared services organisations tend to choose 'business monarchy' to reduce the monitoring costs. The findings may also indicate the agency relationships have a more business (or principal) 'control' focus. For example, 'iso-corporate' is a separate special purpose vehicle (e.g., joint venture) set up by two or more participating organisations and allows external customer access. These organisations are thus

a profit-maximising (or cost-minimising) entity with relatively higher agency risk, the key IT governance mechanisms and principles point to more centralised approaches.

Third, new technology is driving a higher demand for standardisation and integration (Pankowska, 2008). For example, the internet has profoundly changed the connectedness of the world as a whole. The increased capacity to link organisations enables significantly more interdependence than previously possible. Business units share information about products, customers, and marketing information. Organisations are leveraging cloud computing to provide increased standardisation of IT infrastructure (Chandrasekaran & Kapoor, 2011). Meanwhile, new regulatory requirements and financial reporting also place demands on the organisation for integration. While standardisation may be a necessary condition that facilitates integration. Standardisation of technology, applications, data and business processes drives down costs by sharing support services, creating leverage over suppliers, and reducing per unit costs through economies of scale. Therefore, the IT function may be best suited to support such business units via a more centralised IT governance approach to drive integration and standardisation.

Fundamentally, organisational structure and governance mechanisms are complementary means to the same end, i.e., aligning shared services strategy and operations with business needs (Accenture, 2007; Grant et al., 2007). The literature shows no unified best practice governance model. There is always a trade-off between efficiency and service levels. This study suggests organisations should deliberately design the shared services delivery arrangement and IT governance structure to complement each other in driving cross-stakeholder communication and collaboration.

6.2.2 IT Governance Structural Gap

6.2.2.1 Presence of IT Governance Structural Gap

IT governance structural gap refers to the difference between decision rights and accountability. The results validate the significant importance of aligning the decision rights and accountability in shared services organisations. The findings demonstrate a small effect size of $f^2 = 0.03$ (path coefficients -0.113, $p < 0.001$). H6a is confirmed.

This result is consistent with the importance that any decision-making framework must also define accountability for IT decisions. An IT governance structure that creates a balance between decision rights and accountability can promote desirable decision-making with respect to IT assets (Gurbaxani & Whang, 1991; Weill & Ross, 2004). Hence, this study demonstrates that decision rights are only part of the definition of IT governance. Accountability is the second part of the definition of IT governance required to ensure that the decision makers deliver the expected

business value of IT. For example, when a project sponsor (client) advocates for committing limited resources for initiative A over initiative B because it represents a greater value, they should be accountable for delivering that value. The challenge of shared IT governance is in the accountability systems used to produce the expected returns in the business case.

According to traditional concepts, an accountability relationship exists when a principal delegates authority to an agent to act in their interest. Central to this view is that only those with formal authority over an agent – those that have delegated authority to it – have the right to claim accountability (De Lombaerde, 2006). Accountability is largely seen as an end stage activity where judgement is passed on results and actions already taken. This understanding may be too narrow. This study reveals that decision-right-accountability needs to be more encompassing if it is to ensure IT shared services truly generates the expected business value.

6.2.2.2 Assessment of IT Governance Structural Gap

The assessment of IT governance structural gap includes mapping the current governance structure onto the governance structure, auditing IT governance metrics and accountabilities, and evaluating IT governance awareness and engagement on a regular basis. The empirical results do not exhibit a positive business value impact of IT governance assessment in shared services organisations. The main model yielded effect size $f^2 = 0.00$ (path coefficient -0.012, $p > 0.05$). Hypothesis H6b is not supported.

The results suggest that formal assessment of IT governance structure is not associated with any direct performance effect. Organisations apparently do not seek to invest into a cyclic, comprehensive, systematic, and regular review of IT governance activities. Recent literature reveals many organisations delay assessing their IT governance because there is no one-size-fits-all approach. The scale of an enterprise assessment of IT governance can be taxing for an internal audit team (Haseley & Brucker, 2012). Additionally, many corporate boards do not explicitly practice a formalised style of IT governance (Jewer & McKay, 2012). Therefore, formal assessment of IT governance may face significant challenges to be included in the corporate governance audit program. Another possible reason for the lack of statistically significant results could be agency relationships do not always characterise IT governance. For example, role conflict, ambiguity and lack of empowering structures might make agency relationships difficult to maintain. Organisations may be institutionalising a variety of mechanisms to increase their accountability and assess their IT governance effectiveness, such as stewardship relationships.

This study alerts organisations to the importance of establishing a decision rights-accountability framework for shared IT services. However, developing effective strategies for IT governance assessment is still a challenging task for business leaders to ensure the expected

business outcomes generated from IT. Table 6.2 summarises the findings for IT governance structural gap.

Table 6.2: Summary Research Findings for IT Governance Structural Gap

Hypothesis	Description	All Sample n = 205
6a	Lower levels of IT governance structural gap between decision rights and accountability are associated with higher levels of IT-business value	Support
6b	More formal and regular assessment to minimise IT governance structural gap are associated with higher levels of IT-business value	No Support

6.2.3 Monitoring Mechanisms

This study proposes that monitoring mechanisms have a positive effect on business value generated from IT. The monitoring mechanisms for IT shared services are influenced by the fears of opportunism (e.g., difficult and expensive to measure performance, different attitudes toward risk, conflicting goals and priorities) through the lens of client-provider agency relationships. To address the agency challenges, this study considers the professional and customer levels of monitoring mechanisms, i.e., independent review, profession-wide oversight and joint working.

6.2.3.1 Independent Review

Independent review refers to the involvement of shared services client to influence IT service performance. The application of independent review control has a positive impact on the business value of IT and has a moderate overall effect size of $f^2 = 0.02$ (path coefficient strength of 0.129, $p < 0.05$). Hypothesis 7a is confirmed.

In addition to the IT governance structure within shared services organisations, the relative knowledge attributes of the client also influences the provider's performance. One way in which principals can avert problems from knowledge asymmetry is by utilising a dedicated officer to monitor compliance of shared services agreement, a formal working group to review service products, and a business client to oversee operating policy. Although the professionals who serve in these oversight roles have no hierarchical authority, they are subject to pressures for business performance and qualified to issue directives governing the shared IT work. They also serve to restrain the opportunistic inclinations of an unscrupulous provider. Hence, the client can ensure the organisation's goals are aligned and resources are assigned in an optimal way, so that the business value of IT increases.

This study suggests connecting with shared services client continues to be essential after the implementation of shared services delivery arrangement, when the focus shifts from gaining initial acceptance to managing ongoing performance. For example, reaching agreement on key performance indicators (KPIs) for both service cost and service quality can set the stage for

productive future conversations with client and help gain client's confidence. Support from client leader can be a key factor in encouraging appropriate behaviour among shared services users.

6.2.3.2 Profession-wide Oversight

Profession-wide oversight refers to adoption of well-defined standards of work, such as benchmarking and best practice frameworks. The results demonstrate the significant importance of professional oversight for shared services organisations and shows a moderate effect size of $f^2 = 0.14$ (path coefficients 0.466, $p < 0.001$). Hypothesis 7b is confirmed.

In the absence of any asymmetry of knowledge, profession-wide oversight of agents is accomplished by such means as implementation of IT governance frameworks (e.g., COBIT) and determination of benchmarking. The positive performance effect is in line with other findings that suggest that IT governance adoption improved organisational performance. The effect is more significant one year after the adoption of the framework, and as long as the control mechanisms get more mature, more expressive are their benefits (Lunardi et al., 2014). Organisations make use of formal models more effectively to hold both business and IT accountable for IT decisions and business outcomes. IT benchmarking is utilised to identify optimisation potentials and extrapolate recommendations how shared IT performance could be improved. This study provides strong indication for the effectiveness of profession-wide oversight that influences the business value generated from sharing IT services.

6.2.3.3 Joint Working

Joint working refers to when the client is engaged actively in the joint creation or coproduction of the IT service products. The empirical results show the significant importance of joint working for shared services organisation and shows a moderate effect size of $f^2 = 0.08$ (path coefficients 0.263, $p < 0.001$). Hypothesis 7c is confirmed.

The agency perspective assumes there is a need for a guarantee against 'the intrusion of unscreened and unpenalized opportunists' (Williamson, 1985). However, this study demonstrates the significant importance of joint working on business value of IT. The interaction and routine consultation between client and provider serve to share information, exercise social influences and reduce misunderstandings. Interaction between principals and agents increases trust and generates the expectation that one will not undermine the other's interest even in the face of countervailing short-term opportunities. In agency exchanges involving professions, a high degree of trust is likely to strengthen the presumed altruistic orientation of professionals and further constrain their opportunistic inclinations (Chiles & McMackin, 1996).

This study demonstrates joint working carries an influencing function of control to achieve desired outcomes from IT shared services. Shared services can affect people outside the functions being moved to shared services as well as those within it. Proactive reaching out to client can give stakeholders a sense of ownership in shared services; equally important, it can allow the provider to consider customer input when developing shared services policies and processes. Table 6.3 summarises the findings for monitoring mechanism.

Table 6.3: Summary Research Findings for Monitoring Mechanism

Hypothesis	Description	All Sample n = 205
7a	Higher levels of monitoring roles being played by independent professionals are associated with higher levels of IT-business value	Support
7b	Higher levels of adoption of profession-wide well-defined standards of work are associated with higher levels of IT-business value	Support
7c	Higher levels of client involvement in the joint production of service product are associated with higher levels of IT-business value	Support

6.3 Limitations

There are several limitations to take into account when assessing the overall contribution of this study. Cook and Campbell (1979) identify four potential threats to validity: threats to internal validity, threats to external validity, threats to construct validity, and threats to statistical conclusion validity. The potential threats to validity and preventive actions throughout this survey research design are discussed as follows:

6.3.1 Threats to Internal Validity

Internal validity refers to the validity with which statements can be made about whether there is a casual relationship from one variable to another in the form in which the variables are manipulated or measured (Cook & Campbell, 1979). The following table outlines the actions taken to minimise threats to internal validity.

Table 6.4: Threats to Internal Validity

Threats to Internal Validity	Explanation	Action Taken
History	The participating organisations might face a series of extraordinary events during the implementation of IT sourcing strategies, e.g., operation restructure. Depending on the nature of the reorganisation and organisational constraints, not all of the proposed dependent variables could be measured and tested in time, e.g., form of shared services. In addition, the restructure experience might have some influence on the ways the participants would respond to some of the questionnaires, e.g., roles and responsibilities changes.	A survey company was utilised to recruit participants. The survey company maintained database of significant amount of research volunteers. Hence, it was more likely to have a sample including the five shared services delivery forms and representatives from both shared services client and provider.
Selection of Subjects	Biases might result in the selection of comparison organisations or participants.	This research specified the sampling selection criteria (i.e., executive management, middle management, and IT management) and obtained a written agreement from the survey company to assure the representativeness of the

Threats to Internal Validity	Explanation	Action Taken
		survey sample.
Testing, statistical regression and instrumentation	Effects of pre-tests and pilot tests might alter responses on post-tests.	All respondents for the main survey were selected via the survey company. All respondents from the pre-test and pilot-test were excluded from the main survey.
Common method bias	The measurement method might cause systematic measurement error and further bias the estimates of the true relationship among theoretical constructs.	Procedural remedies were taken: ensuring respondents answered anonymously, using concise and simple terms in questionnaire, and measuring an item with mixed-scale of Likert and semantic differential.

6.3.2 Threats to External Validity

External validity refers to the generalizability of the findings beyond those who participated in the research project. It is a particularly important goal of survey research. The ability to query a certain proportion of the population and make generalizations to the whole of a particular population is an attractive feature of survey research (Cook & Campbell, 1979). Table 6.5 presents the major threats to external validity.

Table 6.5: Threats to External Validity

Threats to External Validity	Explanation	Action Taken
Non-representative Sample	The selection procedure might not provide rules or methods for inferring sample results to the population. This study might represent only a few forms of IT governance or shared services delivery arrangements. Thus, these findings might only be generalizable to organisations undergoing similar transitions. In a similar vein, employees from the client organisations might have unique perspectives on and attitudes toward shared services environment, which can further restrict the external validity.	Selection rules and procedures were carefully designed as shown in Chapter 4. For example, 'screening' questions were included to make sure that only those people who used or provided IT shared services would participate in the survey. This study ensured as much as possible that it is representative of the population through random sampling technique selected from the sampling frame.

6.3.3 Threats to Construct Validity

Construct validity refers to the degree to which inferences can legitimately be made from the operationalisations in the study to the theoretical constructs on which those operationalisations were based (Cook & Campbell, 1979). Like external validity, construct validity is related to generalizability. External validity involves generalizing from the study context to other people, places, or times. Construct validity concerns the logical confidence one can have in whether the variables in a study are valid measures of the corresponding constructs in the theory being tested. Table 6.6 shows the major threats to construct validity.

Table 6.6: Threats to Construct Validity

Threats to Construct Validity	Explanation	Action Taken
Inadequate Preoperational Explication of	Introduction of bias due to lack of standardised measures.	Where possible, existing instruments were adapted. The survey instrument was also carefully designed and reviewed by the

Threats to Construct Validity	Explanation	Action Taken
Constructs		researcher's supervisors and the IT professions.
Mono-Method Bias	The mono-method bias limitation arises when one data collection method is used for measuring a complex construct.	The threat was minimised by carefully constructed all survey items, and used preliminary review and pilot study to eliminate item ambiguity (e.g., avoid double-barrelled questions, avoid complicated syntax, keep questions simple, specific, and concise).
Non-response bias	Failed responses could affect the statistical results using surveys as a method of data collection.	The completion rate was maximized by utilising a professional survey broker and paying special attention to questionnaire design (e.g., simple survey formats, length of questionnaire).
Evaluation apprehension	In questionnaires, respondents often answer according to what they would like to do, or what they think the researcher would like to hear from them, rather than what they in fact do.	To alleviate this problem, non-threatening questions designed to elicit facts were used in the construction of the instruments.
Interaction of testing and treatment	The observed effects might be due to the sensitisation effects of the pretesting.	This threat was addressed by using different people for pre-testing and pilot testing the instruments from those who participated in the actual study.

6.3.4 Threats to Statistical Conclusion Validity

Data obtained through survey and case research methods are subject to measurement and other errors that cannot be controlled (Galliers, 1994). If the errors are random, their presence will not threaten statistical conclusions. The presence of unknown, systematic errors within data obtained by field-research methods, however, cannot be fully discounted. Table 6.7 discusses the major threats to statistical conclusion validity.

Table 6.7: Threats to Statistical Conclusion Validity

Threats to Statistical Conclusion Validity	Explanation	Action Taken
Low statistical power	The likelihood of making a Type-II error (fail to reject the null hypothesis when the alternative hypothesis is true) increases when sample sizes are small and alpha is set low.	The sample size in the study is 205 participants The threshold for statistical significance was raised to 0.05. The Exact Test technique and Partial Least Squares (PLS) technique are robust in terms of small sample size. It is unlikely that the major conclusions are threatened by low statistical power.
Violated assumptions of statistical tests	Violations of assumptions underlying statistical tests such as normality and homogeneity of variance.	The Exact and Monte Carlo methods, provide a powerful means for obtaining accurate results when the data set is small, the tables are sparse or unbalanced, the data are not normally distributed, or the data fail to meet any of the underlying assumptions necessary for reliable results using the standard asymptotic method. Some data may not be normally distributed. The bootstrap technique used to test the statistical significance of the coefficients derived for the research model and examine the stability of estimates does not require the data to be normally distributed. Additionally, PLS makes no distributional assumption other than predictive specification in its procedure for estimating parameters.
Fishing and the error-	The probability of making a Type-I error on a	Given the number of individual test planned,

Threats to Statistical Conclusion Validity	Explanation	Action Taken
rate problem	particular comparison in a given experiment increases with the number of comparisons to be made.	concerns about inflated Type-I error (rejecting the null hypothesis when it is true) had to be addressed. Each step of the PLS minimises a residual variance with respect to subset of the parameters being estimated by given proxies or fixed estimates for the other parameters. The probability of erroneous conclusion drawn from the findings is minimal.
The reliability of the implementation of the treatment	When treatments are not administered in a standard fashion (e.g., different administrators and/or the same administrator behaving differently on different occasions), error variance will increase, and the chance of obtaining true differences will decrease.	Care was taken to ensure that the procedures for the timing, distribution, and collection of both the research questionnaire were standardised. The same survey broker distributed, collated, and administered the data. Accordingly, any threat to reliability of treatment implementation is minimal.
Random irrelevancies in the setting	The inflation of error variance due to irrelevancies other than the treatment that affects the dependent variable.	In such diversified environments, there may well have been a number of irrelevancies that affect the scores of the variables. This thesis attempted to control for this problem by allowing participants to complete and return the questionnaire as quickly as possible. Feedback from the panel of practitioners and participants in the pre-test and pilot test suggested that the questionnaire was simple and able to be completed within the appropriate time limit (20 minutes). Hence, erroneous sources of variations should be minimised.
Random heterogeneity of respondents	The respondents in any of the treatment groups can differ on factors that are correlated with the major dependent variables. Occasionally, certain kinds of respondents will be more affected by a treatment than others. At other times, respondents do not focus on the treatments but on the outcomes. When this happens, the error variance will be inflated.	This threat was reduced by randomly selecting the participants from the sampling frame.
The reliability of measures	Increased error from irrelevant, unreliable, or invalid measures.	Although measurement error is almost inevitable, the likelihood of this error was reduced by careful adherence to the validation techniques available. Multi-items measures were generated from existing literature. The measures were pre-tested and pilot tested. The results of reliability test indicate the scales were reliable.

Despite the outlined limitations, this survey format provided the researcher with a number of significant advantages such as low cost, possibility to monitor the data quality throughout the survey process, and obtaining electronic data directly usable in the SPSS and SmartPLS applications.

6.4 Implications

This research will enrich and expand the conceptualization of IT governance by identifying the complexity of IT governance arrangements and examining the impacts on business value of IT in the shared services environment.

6.4.1 Theoretical Implications

IT governance is experiencing yet another transformation, and persists as a complex and evolving phenomenon (Van Grembergen et al., 2004). This study offers several scholarly contributions extending the research done by other researchers as well as introducing some unique aspects in this domain. While there have been very limited studies to analyse IT governance in IT shared services environment, this study explored and explained the issues involved when migrating to different shared services delivery arrangements. This research takes a more integrated approach to shared IT governance issues and develops an inter-disciplinary perspective by building on agency theory while considering the rich new insights offered by complementary theories, such as the resource-based view.

First, this study investigates how the resource-based view would utilise IT resources and their integration with the concept of organisational capabilities (e.g., business knowledge) to enable IT governance capability for the organisation, and then the impact on IT governance structure. Although the empirical evidence does not fully support the proposed decision rights matrix, it has to be questioned whether or not some IT resources, such as IT infrastructure, have the potential to deliver significant competitive advantages. Moreover, research into the role of IT resources as knowledge assets, business assets, or shared assets seems to be ignored up to now. In particular, this study provides several starting points for further research in the field of inter-organisational IT governance by designing and implementing mechanisms for their IT shared services.

Second, the study views IT governance as a capability that, if ineffectively developed and implemented, may affect the business value generated from the shared IT sourcing. Given that the impacts of an organisation's actions are often diffuse, accountability should be so too. However, accountability is especially confused in IT shared services and has been little explored. Accountability should not be determined by delegation of authority alone. Although an individual may not have delegated authority to an organisation to act in their interest, the activities of the latter may substantially affect them enough to warrant the establishment of an accountability relationship. For example, the business unit executive (client) would be responsible for developing technology-enabled new business model/capability ideas and formulating business/IT strategies around them, then making decisions and realizing those ideas with assistance from IT (provider). This view of accountability emphasises that organisations have to respond to the needs of many stakeholders. This view also emphasises under outcome accountability, the results of individuals' decisions are the criteria by which decisions are assessed. This study contributes to further research by challenging the appropriateness of outcome accountability as the dominant form of accountability for IT governance.

The third and perhaps most significant contribution comes from the critical examination of the key assumptions of agency theory. This study takes issue with the sole reliance of the theory on self-interest, for instance, and it suggests that agent disposition toward doing good (altruism) should be given greater attention in the specific framework addressing IT shared services (Fama & Jensen, 1983; Jensen & Meckling, 1998; Jensen & Meckling, 1999). Furthermore, given the collaborative nature of IT shared services and power asymmetry favouring agents because of their expert knowledge, this study suggests restraints on opportunism come not only from bureaucratic control (e.g., independent review) but also client control (e.g., joint working). Given the special attributes of client-provider exchange, this study validated the significant importance of profession-wide oversight that reduces knowledge asymmetry. This research, therefore, complements existing research.

This study contributes to the body of empirical research on developing a holistic guideline of IT governance. The findings validated the assertions that IT governance is not solely concerned with the formal allocation of IT decision-making authority. Irrespective of the locus of control, developing collaborative management styles and professional best practice competencies should be included for the governance of IT (Peterson et al., 2000; Weill & Ross, 2004).

6.4.2 Practical Implications

The research model will benefit organisations in several ways. First, managers today need to be aware of the varieties of shared services delivery arrangements, how they differ from each other in terms of strategic consequences, risks such as technology leakage and other opportunism, and breadth and intensity of intra or inter-organisation interactions. This study suggests various IT governance structures for different shared services delivery arrangements to manage IT resources.

This study alerts organisations to the importance of establishing a decision rights-accountability framework for shared services. This study indicates that shared services organisations perceive a gap between their decision rights and accountability for major IT decisions. These IT governance structural gaps will directly affect the organisational outcomes. There are a number of solutions to bridge the business gap, but a precursor is to recognise that gaps exist. After that there are structural, process, and relationship capabilities that can be implemented (Peterson, 2004). A shared services organisation that is accountable to multiple stakeholders not only ensures that decisions are effective in meeting the needs of those it affects, but also that decision-making processes are more equitable. As shown in the research model (figure 2.1), accountability that is pursued on an ongoing basis opens up space for those affected by an organisation’s policies to input into the decision-making process. This link in turn creates feedback loops that enable organisations to learn from what is effective and what is not. Accountability is no longer simply a mechanism for

disciplining power, but also a force for organisational change and for strengthening organisational performance. Clearly, accountability's effects are not only beneficial to stakeholders, but also to organisations themselves.

As mentioned above, shared services may be accompanied by agency problems and potentially bears the risk of knowledge leaking. This risk is increased if the measurability of the service output is limited (Jensen & Meckling, 1999). This study has identified three mechanisms to align interests between shared services clients and providers: independent review, professional-wide oversight, and joint working. Control is among the most frequently used methods to reduce agency costs (Eisenhardt, 1989), however, it normally involves substantial costs. Furthermore, it may have negative effects on the motivation of employees. Control can take the form of direct supervision of the shared services provider, formal reporting on achieved service-level agreements and key performance indicators. For client-provider relationships, the possibilities for direct control are limited. However, the findings show that the involvement of the client in operational matters increases the business value of IT. Further, the effective collaboration of client-provider teams and the sharing of information lie at the heart of a successful shared services strategy.

To provide effective oversight that will help keep shared services organisations on track with their business strategy, the findings highlight a strong need for IT benchmarking and governance frameworks. International IT governance control frameworks, such as COBIT, help enterprises take full advantage of their information, thereby maximizing benefits, mitigating risks and capitalizing on business IT-related opportunities. Shared services organisations can look at effective governance and control over IT as a way to achieve the basic principles of IT value – on-time and within budget delivery of quality IT that achieves its promised benefits. Management can then use COBIT to translate this into increased competitive advantage, customer satisfaction, employee productivity and profitability, and reduced time for order/service fulfilment and customer wait time (Hardy, 2006; Ridley et al., 2008).

6.4.3 Avenues for Future Research

The results of this study suggest several areas for future research. They include replications of the current study and refinements of measurement scales. This thesis argues that integrating strategic perspectives on sustained competitive advantage with literature on business models allows for an evaluation of IT governance structure, which is inclusive of important elements from otherwise differing approaches to the subject. Furthermore, the analysis allows us to reveal a greater complexity than when applying insights that look solely at e.g., agency factors or firm specific attributes (RBV). At the same time, however, this 'greater complexity' can also be a source of increased confusion as to whether it is possible to state a generalization of what leads to the design

of IT governance structure. When so many different factors are taken into account, it can be difficult to pinpoint which of these are the actual determining causes. Furthermore, shared services is highly dynamic and IT sourcing strategies may change when regulation is altered or when new technology are introduced. Further research could support that assumption but should also address the impact of specific contingencies such as industry, size of the organisation, business strategy, etc. Hence, one possible extension is to replicate the current study with organisations that face different levels of competitiveness and business environments so as to further develop the framework.

The research findings demonstrate that there are various delivery models possible for shared services. The investigation of various types of shared services delivery arrangements and the factors determining the type and performance of these business models is an interesting area for future research. In addition, this research is based on a 'snapshot in time', and future research could be dedicated to verify how IT governance implementations evolve over time in different stages of maturity. Some results of the study were unexpected. For example, the non-significance of the IT governance assessment construct is certainly a finding that needs further investigation in future research.

This study reveals the IT governance structural gap between decision rights and accountability is a concern of IT governance. Future research is needed to better conceptualise how accountability, along with decision rights, figures within IT governance structures. In shared IT environment, a trilateral relation is created between executive boards, business unit managers and shared services managers. It may not only be that the business unit managers are accountable to the executive board for performance, but the executive board also has a responsibility towards business unit managers to perform agreed services. The utilisation various board-level IT governance frameworks seems particularly fruitful for future research.

From this thesis, profession-wide oversight is an important monitoring mechanism in generating business value. It might be useful to carry out further research to identify the direct and indirect benefits provided by the IT governance frameworks (e.g., COBIT, ITIL) most commonly adopted by shared services organisations. Hence, future research should analyse the impact of adopting IT governance mechanisms over time (including more than one-year post-adoption data).

The findings of this thesis provide preliminary evidence that informal monitoring mechanisms are important to influence business value of IT. Future research should investigate the usefulness of other theoretical lenses, such as stewardship. Finally, another possible extended study is to examine if there would be a mixture of agency and stewardship relationship characterising IT governance in shared services.

6.5 Chapter Summary

This chapter concludes the thesis. It summarises the findings of the research and identifies its limitations. The chapter outlined the contributions of this research to theory and identified practical implications for organisations that want to apply IT governance strategy. It also offered some suggestions for future research.

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APPENDIX A: IT RESOURCE CHARACTERISTICS

Adapted from Wade and Hulland (2004), the relationships between IT resources (categorised by IT decision domain) and their attributes are identified in Table A.1 below and they are briefly discussed in the following paragraphs. As Wade and Hulland emphasise, the table is based on limited empirical evidence and it describes hypothesised rather than proved relationships. The entries in this table should be interpreted in relative (i.e., versus other entries in the same table) rather than absolute terms.

Table A.1: Resource Attribute and IT Decision Domain[14]

IT Resource Characteristic (IT Decision Domain)	Advantage Creation			Advantage Sustainability		
	Value	Rarity	Appropriability	Inimitability	Non-substitutability	Immobility
Outside-In:						
IT principles	H	H – M	M – L	H	H – M	H
IT investment	H	H – M	M – L	H	H – M	H
Spanning:						
Business application needs	H	H – M	M – L	M – L	M – L	M
Inside-Out:						
IT architecture	H – M	M – L	M	M	M – L	M
IT infrastructure	H – M	M – L	H	L	H – M	L

Note: L = low; M = moderate; H = high

Outside-In: IT principles and IT Investment

IT principles resources are responsible for the formulation of high level statements about how IT will be used to create business value. IT principles should be informed by the enterprise business principles. For example, a business principle of '*Develop partnerships with national electricity distributors on a shared services basis*' leads to several IT principles, including '*Data must be accessible through common systems to facilitate aggregation*'. IT investment focuses on the how much and where to invest in IT, including the procedures for progressing initiatives, their justification, approval and accountability.

In general terms, all IT resources are valuable (Bharadwaj, 2000; Mata et al., 1995; Ross et al., 1996). Outside-in resources seem to have potentially higher value than inside-out resources to firms. For example, IT principles and IT investment skills include management's ability to collect information from sources internal and external to the firm, as well as the dissemination of a firm's

[14] The table shows how five key IT decision domains can be organised to facilitate the effective and efficient management of IT resources. While a variety of different terms for IT resources have been used in past research, these five IT resources (decision domains) can be mapped directly onto Wade and Hulland's framework (originated from Day, G. S. 1994. The Capabilities of Market-driven Organizations. Journal of Marketing, 58(4): 37-52.) to identify their relative contributions to competitive advantage. High, medium, low ratings for individual resource attribute represent the relative 'degree of strength' to advantage creation or sustainability. The IT resources were ranked by the researcher according to the conceptual sources in the theoretical development research of Wade and Hulland (2004). For example, IT infrastructure is ranked as 'high' in 'appropriability', a rent-generating resource in the short term, particularly when the firm possessing the IT resource has a first-mover advantage in its use, and competitors find such uses difficult to wrest away from the advantaged firm. Firms that are first to possess next-generation hardware and software are typically able to use this new infrastructure to improve firm efficiency and/or effectiveness, thereby enhancing short-term competitive advantage and rent-earning potential. However, IT infrastructure has the least overall potential contribution. Many components of the IT infrastructure (such as off-the-shelf computer hardware and software) convey no particular strategic benefit due to lack of rarity, ease of imitation, and ready mobility. Thus, the IT infrastructure resource has generally not been found to be a source of sustained competitive advantage for firms.

market intelligence across departments and the organisation's response to that learning. They include the abilities to invest in the 'right' projects and to react quickly to changes in market conditions. Therefore, these managerial decision-making capabilities, if valuable, must be based on a continued understanding of the changing business environment. Without them, the full potential of IT for a firm will almost certainly not be realised. Moreover, these resources are likely to be socially complex and have a higher degree of rarity. The appropriability of the outside-in resources tends to be lower than that of the inside-out resources. This stems from the fact that they tend to be organisationally complex, and thereby more difficult to deploy successfully (Wade & Hulland, 2004).

Over time, some IT resources become easier to imitate than others. The outside-in resources are likely to be more difficult to imitate because these resources will develop and evolve uniquely for each firm. For example, making sound IT-business investment decisions require significant knowledge in the market trend, the financial direction of the organisation, and historical data pertaining to the relationship between IT spending and revenue generation. Strategic substitutes for the outside-in resources are also likely to be rare, although it may be possible for firms with a subset of these capabilities to compete on an equal basis with firms possessing a different subset. A resource is mobile if firms without a resource (or capability) face no cost disadvantage in developing, acquiring, and using that resource compared to firms that already possess and use it. In this case, that resource (i.e., mobile resource) can only be a source of temporary competitive advantage at best. On the other hand, if a firm without a resource or capability does face a cost disadvantage in obtaining, developing, and using it compared to a firm that already possesses that resource (i.e., resource immobility), then the firm that already possesses that resource can have a sustained competitive advantage (Barney, 1991). The IT principles and IT investment capabilities are generally not readily available in factor markets. Therefore, the mobility of these resources is expected to be low.

Spanning: Business Application Needs

Spanning resources include management's ability to conceive of, develop, and exploit business applications to support and enhance other business functions. These skills seem to have potentially higher value than inside-out resources to firms and can enable firms to manage the market risks associated with investing in IT. Thus, the development of spanning skills is often a socially complex process, and one not subject to low cost imitation compared with inside-out resources. Similar to the outside-in resources, the spanning resources are likely to be associated with a higher degree of rarity and lower appropriability. The spanning resources cannot be easily acquired in factor markets, and they must instead be developed through on-going, firm-specific investments, or through mergers and/or acquisitions of other companies. For example, these

capabilities represent the processes of integration and alignment between the IT function and other functional areas or departments of the firm. This resource has also been referred to as IT and business synergy, assimilation, and partnerships. The importance of building relationships internally within the firm among the IT function and other areas or departments has been recognised and well documented (Gottschalk, 2006). An element of this resource is the support for collaboration within the firm, resulting in superior competitive position and firm performance. Strategic substitutes for the spanning resources are also likely to be rare. Therefore, the mobility of these resources is also expected to be low.

Inside-Out: IT Architecture and IT Infrastructure

IT architecture is about the set of technical choices that guide the enterprise in satisfying business needs. For example, the development of some agreed components of data architecture so that customer information can be meaningfully shared, together with selected standards to support the agreed architectural approach. IT infrastructure strategy describes the approach to building shared and standard IT services across the enterprise. For example, implementing the customer profiling approach requires the development and management of some shared and standard applications across the enterprise.

While inside-out resources can lead to greater efficiency and/or effectiveness at any particular point in time, it is essential for the firm to track and respond to the changing business environment over time if it is to attain a sustainable competitive advantage. Therefore, these resources have relatively lower value than outside-in and spanning resources.

The inside-out resources, as opposed to outside-in and spanning resources, are likely to be associated with a lower degree of rarity. The underlying reason for this claim is that available labour markets allow firms lacking key IT architecture and IT infrastructure resources to acquire them by offering superior wages or through business arrangements with external consultants.

IT architecture and IT infrastructure may be appropriable, rent-generating resources in the short term, particularly when the firm possessing the IT resource has a first-mover advantage in its use, and competitors find such uses difficult to wrest away from the advantaged firm. For example, firms that are first to possess next-generation hardware and software are typically able to use this new infrastructure to improve firm efficiency and/or effectiveness, thereby enhancing short-term competitive advantage and rent-earning potential.

In contrast, firms are likely to be able to develop IT architecture capability through the hiring of relevant expertise via existing labour markets or by interacting with external consulting firms. Thus, the resources will be more imitable than the outside-in and spanning resources, but less imitable than the IT infrastructure capability. Existing empirical evidence suggests that IT infrastructure is particularly easy to imitate over moderate to longer time periods. For example,

many components of the IT infrastructure (such as off-the-shelf computer hardware and software) convey no particular strategic benefit due to lack of rarity, ease of imitation, and ready mobility. Despite research attempts to focus on the inimitable aspects of IT infrastructure, the IT infrastructure resource has generally not been found to be a source of sustained competitive advantage for firms (Wade & Hulland, 2004).

The key question that one needs to answer in considering substitutability is whether or not a strategically equivalent resource exists and is potentially available to the firm while leading to the same outcome. This situation may involve the use of very different resource sets, but it could also reflect a decision to acquire and deploy resources in-house versus obtaining them from third parties. In the case of IT infrastructure, it seems unlikely that strategic alternatives exist that lead to the same ultimate competitive position. Thus, the substitutability of this resource will be relatively low. At the other extreme, firms may be able to outsource their business application development (e.g., part of the IT architecture resource) to third parties, and thereby compete effectively. For instance, firms without the required analysis, design, and programming skills required to make an IT investment can hire technical consultants and contractors.

Immobility captures the extent to which the underlying resource can be acquired through factor markets. IT infrastructure, once established, is easily disseminated to other firms, and is thus highly mobile. IT architecture can be acquired via the marketplace; thus, they are also relatively mobile.

Overall Advantage Creation & Advantage Sustainability

The resource-based view argues that firms possess resources, a subset of which enables them to achieve competitive advantage, and a subset of those that lead to superior long-term performance. Resources that are valuable and rare can lead to the creation of competitive advantage (i.e., ‘high’ in Overall Advantage Creation). That advantage can be sustained over longer time periods to the extent that the firm is able to protect against resource imitation, transfer, or substitution (i.e., ‘high’ in Overall Advantage Sustainability) (Willcocks et al., 1997).

In general, when compared to inside-out resources, outside-in and spanning resources tend to have somewhat greater value, be rarer (but less appropriable), be more difficult to imitate or acquire through trade, and have fewer strategic substitutes. Focusing on the first two of these attributes suggests that these resources will have a stronger impact than inside-out IT resources on initial competitive position. Furthermore, because it is harder to imitate, acquire, or find strategic substitutes for the former set of resources than for the latter, outside-in and spanning resources are more likely to maintain their rarity, and thus support a sustainable competitive position for a longer period of time.

APPENDIX B: OPERATIONAL DEFINITIONS

Construct	Domain	Definition			Supporting Reference
Shared Services Delivery Arrangement	Intra-service	Collaboration on specific and/or specialist services. This limited shared services option could, at its most basic level, provide for services to gain goods and services centrally from a business unit, e.g., purchasing IT equipment; partnership for delivery a project; or sharing an integrated software package.			(Tomkinson, 2007)
	Service	A degree of formality of sharing a complete service but the organisation is not changed to meet the challenge of the sharing. Generally, one business unit allows another to provide the service with a transfer of control and responsibility, e.g., all the budget belongs to the 'shared' service business unit.			
	Corporate	Two or more business units or organisations form a joint arrangement to 'share' a specific service or services at a mutually agreed standard in which both the costs and benefits are borne by all participating organisations on a negotiated basis, e.g., IT infrastructure services partnership.			
	Supra-corporate	Two or more participating organisations set up a separate special purpose vehicle to deliver a specified service or services on behalf of participating organisations.			
	Iso-corporate	An extension of the Supra-corporate model. The delivery organisation is allowed to provide services to external customers.			
Characteristic	**Intra-service**	**Service**	**Corporate**	**Supra-corporate**	**Iso-corporate**
Organisation (Newman, 2007)	Customer-led; supplier provides support services	Customer-led; supplier provides support services	Customer-led; supplier provides support services	Joint and team working; supplier leads management and has to comply with their own corporate governance rules	Joint and team governance structure; supplier leads the management team
Staff (Newman, 2007)	Staff reside in current organisation	Staff reside in current organisation	Staff reside in current organisation	Staff typically seconded or transfer to service provider organisation	Staff transferred and/or seconded, plus directly recruited by service provider organisation
Risk transference (Tomkinson, 2007)	None	None/Limited e.g., potential loss of autonomy for business units within organisation. Central shared services unit may be less responsive to needs of business units.	Limited/Moderate e.g., cultural change towards cooperation and collaboration is often not an easy process. Cultural seepage – values of larger organisation may dominate. Competition for funding could affect viability of small business units.	Substantial e.g., additional time and cost spent on new organisation may diminish benefits. Privacy, control, confidentiality may be harder to maintain.	Substantial e.g., significant time, costs involved in planning and establishment of provider organisation. Company vulnerable if one service loses funding. Organisational values and culture clashes Service may be less responsive and accessible for clients.
Performance risk (Newman, 2007)	Performance risk rests with the customer	Performance risk rests with the customer	Performance risk rests with the customer	Performance risk borne by parent organisations	Performance risk borne by joint venture. Profit sharing for business growth – i.e. reinvestment rather than being passed back to parents. Maximise profit for the joint venture.
Operationalisation[15]	**Intra-service**	**Service**	**Corporate**	**Supra-corporate**	**Iso-corporate**
Degree of shared IT services (Hyötyläinen & Möller, 2007) Question 3.1	Single or limited services, e.g., IT purchasing. The processes and service provision, IT applications and infrastructure are run by business unit.	The processes and service provision are still run by the business unit, but the IT applications and infrastructure are the responsibility of the shared services	The processes and service provision, the IT applications and infrastructure are the responsibility of the shared services provider, e.g., billing applications and IT	Majority of IT services are the responsibility of the shared services provider.	Majority of IT services are the responsibility of the shared services provider.

[15] The construct 'shared services delivery arrangement' was operationalised by the typology from the study of Tomkinson (2007, p.30). The variables in Question 3 were categorised accordingly.

		provider.	support Services.		
Type of agreement (Bucklin & Sengupta, 1993; Sturm et al., 2000) Question 3.2	None[16]	None	Service- level agreement[17]	Service-level agreement/ Contract[18]	Service-level agreement/ Contract
Degree of formality of service arrangement (Atkin & Rinehart, 2006; Barney & Ouchi, 1986; Bucklin & Sengupta, 1993; Larson, 1992; MacNeil, 1980) Question 3.3	Informal[19]	Informal	Formal[20]	Formal	Formal
Legal Basis (Schulman et al., 1999) Question 3.4	Intra-organisation business unit	Intra-organisation business unit	Intra or Inter-organisation business unit – flexible depending on customer needs	Independent subsidiary – incorporated independent of the parent firm, e.g., joint venture, companies limited by shares	Independent subsidiary - incorporated independent of the parent firm, e.g., joint venture, companies limited by shares
Management arrangement – Centre concept (Venkatraman, 1997) Question 3.5	Cost centre[21]	Cost centre	Service centre[22]	Investment centre[23]	Profit centre[24]
Management arrangement –Service charges (Bergeron, 2003; Schulman et al., 1999) Question 3.6	Shared costs	Annual budget – The 'lead' business unit controls the entire budget belonging to the 'shared' service, the service specification and possibly the responsibility for fulfilling statutory responsibilities.	Cost allocation – Costs incurred are charged to the different business units, where calculations are based on number of users, transactions, or agreed cost drivers.	Transfer price – Services are sold to the various business units. Prices are commensurate to the sum of costs-per-service, or plus profit. Different cost structures depending on the agreement.	Market prices – Services are sold to business units at previously fixed prices equal to those paid in the marketplace.
Management arrangement – External market (Janssen & Joha, 2006) Question 3.7	No access	No access	Very limited – The business units of the parent company receive greater service attention.	Limited access – Through limited access to the external market, different objectives are pursued. The	Free access – Access can apply to the entire portfolio or particular services only, and confers the benefit of additional sales and

[16] Obligation - intra-organisation clients may obtain IT services only from the internal shared services provider. The service obligation can either be all-inclusive or relate only to particular services.

[17] Service-level agreement (SLA) is defined as the disciplined and proactive methodology and procedures that ensure service levels satisfying clients' reasonable expectations are delivered to all classes of users in accordance with business priorities at reasonable cost. The difference between a contract and a SLA is in the intention and tightness of the document. A contract aims to formalise a relationship and is binding in law; a SLA seeks to improve a relationship and is not legally binding. However, failure to deliver on the terms of a SLA will damage or break a relationship as effectively as any breach of contract. While not officially a contract, the SLA can be used as part of a formal deal.

[18] A written contract is designed/developed to create an opportunity to design desired patterns of partner behaviour and to extract penalties from failures to perform. The client decides on whether the internal provider wins the contract according to conventional bidding criteria such as reputation, price and quality.

[19] Informal mechanisms consider the historical and social context of a relationship as well as specifically acknowledging that the performance and enforcement of obligations are an outcome of mutual interest between parties. The use of informal mechanisms, such as implicit contracts, are defined as unwritten agreements between shared services partners which are enforced not by formal authority and power but rather by the desire to create and maintain a positive reputation for integrity and fairness and build trust.

[20] Formal mechanisms clearly specify the required degree of co-operation, conformance and intra or inter-organisational integration through the use of a written document or agreement.

[21] A cost centre aims at supplying IT services at the lowest cost level, focusing on operational efficiency. No profit incentive - savings/quality.

[22] A service centre supports the company's business strategy with IT services by delivering client satisfaction and adherence to agreed service levels.

[23] An investment centre has a much stronger strategic focus by pro-actively creating capabilities for business and using new IT services which shape alternative business strategies. The profits are largely returned to parents in agreed ratios.

[24] A profit centre seeks to obtain knowledge of the external market as well as gain credibility for its internal clients and attain additional revenue for the corporation. It also maximises cost savings and benefits to customer, but retained profits may remain in supplier. Joint venture may adopt 'go to market' strategy.

				expected benefits to the parent company include exclusiveness and flexibility.	the opportunity to use spare capacities.

Construct	Domain	Definition	Supporting Reference
IT Decision Domain Question 4	IT principles	IT principles – High level statements about how IT is used in the business.	(Weill & Ross, 2004, 2005)
	IT investment	IT investment – Decisions about how much and where to invest in IT – project approvals and justification techniques are included.	
	Business application needs	Business application needs – Business needs are specified for purchasing or internally developing IT applications.	
	IT architecture	IT architecture – An integrated set of technical choices to guide the organisation in satisfying business needs. In particular, the architecture is a set of policies and rules for the use of IT.	
	IT infrastructure	IT infrastructure – The base foundation of budgeted-for IT capability (technical and human), shared throughout the firm as reliable services, and generally centrally coordinated.	

Construct	Domain	Definition	Supporting Reference
IT Governance Structure Question 4	Business monarchy	Business monarchy – It represents a group of, or individual, business executives (i.e. CIO or CEO). It excludes IT executives acting independently.	(Weill & Ross, 2004, p. 12; 2005)
	IT monarchy	IT monarchy – Only individuals or groups of IT executives are included.	
	Feudal	Feudal – Business unit leaders, key process owners or their delegates.	
	Federal	Federal – C level executives (i.e. CIO or CEO) and at least one other business group (i.e. business unit leaders). In this archetype the IT executives may be an additional participant.	
	IT duopoly	IT duopoly – IT executives and one other group (i.e. CEO or business unit leaders).	

Construct	Domain	Definition	Supporting Reference
IT Governance Structural Gap Question 5	Structural gap (decision rights vs accountability)	Decision rights – the extent to which groups make or have final 'say so' over decisions. Accountability for outcomes – the extent to which groups are held responsible for the outcome of decisions.	(Grover et al., 2007)
	Gap assessment	Formal – structured assessment conducted, including the following activities: Map the current governance structure onto the anticipated governance structure Audit IT governance metrics and accountabilities Evaluate IT governance awareness and engagement. Regular – an assessment issued during the regular assessment period, such as quarterly, biannually, or annually.	(Clementi & Carvalho, 2009)

Construct	Domain	Definition	Supporting Reference
Monitoring Mechanism Question 6	Independent review	Independent review is the practice of having competent, objective reviewers to evaluate the IT shared services operation. The existence of independent professionals, not permanently and directly employed by the service providers themselves, has often been vital for these efforts. Independent review includes: The influencing role of IT performance. The peer review role refers to the systematic examination and assessment of the performance of shared services provider by experts in IT, and outside stakeholders. The ultimate goal of helping the reviewed provider is to improve its policy making, adopt best practices and comply with established standards and principles.	(Pawlowski & Robey, 2004; Pollitt, 1986)
	Professional oversight	Professional oversight involves the systematic application of IT rules, standards, or principles developed from research and the actual practices of and incidents experienced by major organisations. Benchmarking control refers to comparing performance to industry standards and competitors. Best practice framework refers to the industry standards in the field of IT service management to provide proactive monitoring include ITIL, ISO, COBIT.	(Kouzmin et al., 1999; Kumbakara, 2008)

Construct	Domain	Definition	Supporting Reference
	Joint working	Joint working is defined as the joint effort by which the service provider and client produce the service. In this joint effort, the quality of the final product largely depends on the active involvement of the clients in the joint production of service product. To organize a solution that fits the client's situation, the provider must offer specific knowledge that fits the client specific needs, and combine it successfully with the client's knowledge base. Joint working implies active participation and sharing information between the parties who bring different sets of capabilities and competencies. Participation refers to the degree of willingness to enter into and participate in activities between service providers and clients. Information sharing refers to the degree to which critical information is communicated.	(Hertog, 2002; Lee & Kim, 1999)

Construct	Domain	Definition	Supporting Reference
Business Value of IT Question 7	Business value – The organisational performance impact of IT shared services	The degree to which predefined IT shared services objectives are realised in terms of strategic, economic, technological, and social benefits of IT shared services. Strategic benefits – an organisation's ability to continuously leverage and manage IT resources, and to fit resources to activities so as to underpin a strategy position leading to the achievement of business goals. Economic benefits – an organisation's ability to increase its value by increased profits, decreased costs, and/or accelerated capital flow. Technological benefits – an organisation's ability to access required key information technology components and skills. Social benefits – an organisation's ability to create a working environment which leads to improved motivation and user satisfaction.	(Devaraj & Kohli, 2002)

APPENDIX C: QUESTIONNAIRE

Preface

Thank you for your participation in this study on key issues related to information technology (IT) governance in shared IT services environments. In particular, we are interested in how your organisation makes high-level decisions about the use of IT, who makes those decisions, what monitoring mechanisms are employed, and how effective you think IT governance is in helping your organisation achieve key objectives of sharing IT services.

The term 'IT shared services' is used throughout this survey to mean the concentration of organisational IT resources performing like activities to service multiple internal business units or partner organisations (shared services client), which comes along with the standardisation and consolidation of redundant IT functions. The key is the idea of 'sharing' IT funding and resources within an organisation, group, or inter-organisational collaboration. Thus, the providing department or organisation effectively becomes an internal 'shared service provider'. Please be aware that this study excludes IT outsourcing arrangement, i.e., third party vendor contractually charged with the provision of your organisation's IT functions.

Except where we specify otherwise, if your organisation has multiple IT units, please answer questions with respect to the entire IT function organisation-wide, not just the central/shared IT organisation or local IT department. This survey should be completed by the senior business or IT leader at your organisation and will take approximately 20 minutes.

Please complete this survey by 31st January 2012. Please also be assured all data collected will be kept anonymous and confidential. If you have any questions or concerns, please e-mail decca.cheung@uqconnect.edu.au.

If you agree to participate, please click on the 'NEXT' button below to begin the survey.

This project has been approved by the UQ Business School Ethical Review Committee. The University requires that should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Ethics Officer, telephone on (07) 3365 3924.

Q1 Your role and IT shared services experience

Q1.1 In relation to IT shared services, what role does your business unit or organisation play?

- IT shared services provider, e.g., Corporate IT Department or IT Organisation (1)
- IT shared services client, e.g., Business Unit (2)
- Neither - Do not use or provide IT shared services (3)

Q1.2 Which description best fits your role?

- Top Management Executive - Top two tiers of management e.g., 'C' Level Executive (CEO, COO, CFO), Business Executives, Business Director, etc (1)
- Business Unit Leader - Middle management with overall responsibility for a multifunction operation e.g., Business Unit Manager or Divisional Head, or a functional operation e.g., Marketing Manager (2)
- Local IT Unit Leader (3)
- IT Executive - Shared Services (4)
- Other (Please indicate) (5) _____

Q1.3 What percentage of your organisation's annual expenditure is spent on IT?

- 50 percent or more of budget (1)
- 40 percent of budget (2)
- 30 percent of budget (3)
- 20 percent of budget (4)
- 10 percent of budget (5)
- 10 percent or less of budget (6)

Q1.4 What portion of your organisation's total IT expenditure is directly managed by IT shared services?

- Less than 5 percent (1)
- From 6 to 25 percent (2)
- From 26 to 50 percent (3)
- From 51 to 75 percent (4)
- Over 75 percent (5)

Q2 Your organisation

Q2.1 What type of organisation do you primarily work for?

- Agriculture, Forestry and Fishing (1)
- Mining (2)
- Manufacturing (3)
- Electricity, Gas and Water Supply (4)
- Construction (5)
- Wholesale Trade (6)
- Retail Trade (7)
- Accommodation, Cafes and Restaurants (8)

- ❍ Transport and Storage (9)
- ❍ Communication Services (10)
- ❍ Finance and Insurance (11)
- ❍ Property and Business Services (12)
- ❍ Government Administration and Defence (13)
- ❍ Education (14)
- ❍ Health and Community Services (15)
- ❍ Cultural and Recreational Services (16)
- ❍ Personal and Other Services (17)

Q2.2 How many full time equivalent employees does your organisation have?

- ❍ Under 150 employees (1)
- ❍ 151 to 500 employees (2)
- ❍ 501 to 1000 employees (3)
- ❍ 1001 to 5000 employees (4)
- ❍ More than 5000 employees (5)

Q2.3 In what state does your organisation operate (If your organisation conducts business in multiple states, please tick the appropriate boxes)?

- ❑ Australian Capital Territory (1)
- ❑ New South Wales (2)
- ❑ Victoria (3)
- ❑ Queensland (4)
- ❑ South Australia (5)
- ❑ Western Australia (6)
- ❑ Tasmania (7)
- ❑ Northern Territory (8)
- ❑ Other (Please indicate) (9) _____

Q3 Your shared IT services delivery arrangement

Answer If In relation to IT shared services, what role does your bu... IT shared services client, e.g., Business Unit Is Selected

Q3.1 Please describe how the following IT services are coordinated in your entire organisation.

	Centralised within the entire organisation or other partner organisations (2)	Decentralised by department or business unit (0)	Mixed (1)
IT purchasing services: Computer systems, telecommunications equipment, hardware, and software (1)	❍	❍	❍
IT infrastructure and network management services: Monitoring of IT infrastructure (2)	❍	❍	❍
Application management: Technical expertise and equipment to transform information from one format or media to another (3)	❍	❍	❍
Application services: Design and development of IT solutions such as custom applications, networks and computer systems (4)	❍	❍	❍
Distributed and network services: Hosting and access to IT infrastructure (hardware, software and networks) which enable the hosting of applications and the processing of information (5)	❍	❍	❍
Internet access and backbone services: Connection to, and carriage of traffic on, the internet (6)	❍	❍	❍
IT technical support services: Technical expertise to solve IT related problems (7)	❍	❍	❍
IT technical consulting: Expert opinion on technical matters related to the use of IT (8)	❍	❍	❍
Telecommunication services: Design, operation, and maintenance of telecommunication equipment and facilities (9)	❍	❍	❍
Processing services: High volume data entry, forms processing, and document conversion (10)	❍	❍	❍
Other (Please specify) (11)	❍	❍	❍

Answer If In relation to IT shared services, what role does your bu... IT shared services provider, e.g., Corporate IT Department or IT Organisation Is Selected

Q3.1 Please describe how the following IT services are coordinated in your client organisation.

	Centralised within the entire organisation or other partner organisations (2)	Decentralised by department or business unit (0)	Mixed (1)
IT purchasing services: Computer systems, telecommunications equipment, hardware, and software (1)	❍	❍	❍
IT infrastructure and network management services: Monitoring of IT infrastructure (2)	❍	❍	❍
Application management: Technical expertise and equipment to transform information from one format or media to another (3)	❍	❍	❍
Application services: Design and development of IT solutions such as custom applications, networks and computer systems (4)	❍	❍	❍
Distributed and network services: Hosting and access to IT infrastructure (hardware, software and networks) which enable the hosting of applications and the processing of information (5)	❍	❍	❍
Internet access and backbone services: Connection to, and carriage of traffic on, the internet (6)	❍	❍	❍
IT technical support services: Technical expertise to solve IT related problems (7)	❍	❍	❍
IT technical consulting: Expert opinion on technical matters related to the use of IT (8)	❍	❍	❍
Telecommunication services: Design, operation, and maintenance of telecommunication equipment and facilities (9)	❍	❍	❍
Processing services: High volume data entry, forms processing, and document conversion (10)	❍	❍	❍
Other (Please specify) (11)	❍	❍	❍

Answer If In relation to IT shared services, what role does your bu... IT shared services client, e.g., Business Unit Is Selected

Q3.2 In coordinating your shared IT activities, what kind of agreement governs your business relationship with the IT shared services provider (please tick the appropriate boxes)?

- ❑ No formal Agreement (1)
- ❑ Letter or memorandum of understanding (2)
- ❑ Service level agreement – defines the terms and responsibilities of the parties, the agreed levels of service, and where applicable, the costs of the service (3)
- ❑ Formal contract (4)
- ❑ Don't know (5)
- ❑ Other (Please specify) (6) _____

Answer If In relation to IT shared services, what role does your bu... IT shared services provider, e.g., Corporate IT Department or IT Organisation Is Selected

Q3.2 In coordinating your shared IT activities, what kind of agreement governs your business relationship with the IT shared services client (please tick the appropriate boxes)?

- ❑ No formal Agreement (1)
- ❑ Letter or memorandum of understanding (2)
- ❑ Service level agreement – defines the terms and responsibilities of the parties, the agreed levels of service, and where applicable, the costs of the service (3)
- ❑ Formal contract (4)
- ❑ Don't know (5)
- ❑ Other (Please specify) (6) _____

Answer If In relation to IT shared services, what role does your bu... IT shared services client, e.g., Business Unit Is Selected

Q3.3 Please check all boxes that apply to the formality of your shared IT services delivery arrangement.

- ❑ The terms of our relationship with the IT shared services provider have been written down in detail. (1)
- ❑ Our expectations of the IT shared services provider have been communicated in great detail. (2)
- ❑ In coordinating our activities with the IT shared services provider, formal contractual terms have been developed. (3)
- ❑ The terms of our relationship with the IT shared services provider have been explicitly verbalised and discussed. (4)
- ❑ We have formal mechanisms in place to resolve differences or disputes. (5)
- ❑ Other (Please specify) (6) _____

Answer If In relation to IT shared services, what role does your bu... IT shared services provider, e.g., Corporate IT Department or IT Organisation Is Selected

Q3.3 Please check all boxes that apply to the formality of your shared IT services delivery arrangement.

- ❑ The terms of our relationship with the IT shared services client have been written down in detail. (1)
- ❑ Our expectations of the IT shared services client have been communicated in great detail. (2)
- ❑ In coordinating our activities with the IT shared services client, formal contractual terms have been developed. (3)
- ❑ The terms of our relationship with the IT shared services client have been explicitly verbalised and discussed. (4)
- ❑ We have formal mechanisms in place to resolve differences or disputes. (5)
- ❑ Other (Please specify) (6) _____

Q3.4 What is the business structure of IT shared services?

- ❍ Intra-organisational arrangement – A single business unit brings together IT functions previously carried out by separate business units. (1)
- ❍ Partnership – An association established with two or more organisations that bring competitive benefits to your organisation. A partnership is not a separate legal entity so all assets of the partnership are owned by the partners jointly. (2)
- ❍ Unincorporated Joint venture – A formal relationship (using a legally-binding agreement) is developed between two or more legal entities (organisations). (3)
- ❍ Incorporated joint venture – A separate legal entity is established for the purpose of the joint venture, with the joint venturers acquiring shares in the company. (4)

Q3.5 Which statement best describes your IT shared services?

- ❍ Cost centre - An operational focus that minimises risks with an emphasis on operational efficiency. (1)
- ❍ Service centre - While still mininising the risks, aims to create an IT-enabled business strategies to support current strategies. (2)
- ❍ Investment centre - A long term focus that aims to create new IT-based business capabilities. (3)
- ❍ Profit centre - Delivers IT services to external marketplace for incremental revenue and for gaining valuable experience to become a world-class IT organisation. (4)

Q3.6 What is the funding arrangement?

- ❑ Shared contributions from collaborating partners (1)
- ❑ Budget development and allocation (2)
- ❑ Demand-based Pricing - fully allocate the total cost of the IT function across the business units, the unit rate charge is typically based on the total cost of the service during the period, divided by the actual demand for the service during the period. This leaves the IT function with no residual costs. (3)
- ❑ Capacity-based Pricing - the total cost of the service during the period, divided by the amount of the service available during the period, i.e., it is based on the capacity of the IT function rather than the demand of the business units. If the service is over resourced and IT is able to provide more than the business units consume, IT will be left with residual costs. (4)
- ❑ Discounted market prices (5)
- ❑ Other (Please specify) (6) _____

Q3.7 Is the use of the shared service restricted to internal clients or member organisations only?

- ❍ Yes (1)
- ❍ No (2)

Q4 Your decision-right and accountability in IT governance

Businesses make IT decisions generally about five key areas called decision domains: IT principles, IT architecture and standard, IT infrastructure strategies, business applications needs, and IT investment and

prioritization. Different parties have the right to make the final decisions in each of these areas, and are held accountable for the decisions.

a) Top Management - Top two tiers of management e.g., 'C' Level Executive (CEO, COO, CFO), Business Executives, Business Director, etc
b) Business Unit Leaders - Middle management with overall responsibility for a multifunction operation e.g., Business Unit Manager or Divisional Head, or a functional operation e.g., Marketing Manager
c) Business Process Owners & Key End Users
d) Local IT Unit Leaders
e) IT Executives - Shared Services

Q4.1 IT principles are high-level statements about how IT will be used to achieve organisational goals (e.g., supporting cost cuts or revenue growth).

Please allocate 100 points to describe the proportion of the decision made and held accountable by each decision party? (Please be sure the total sum to 100%)

	Top Management (1)	Business Unit Leaders (2)	Business Process Owners & Key End Users (3)	Local IT Unit Leaders (4)	IT Executives - Shared Services (5)
Within your organisation, who typically make final decisions, individually or as part of a group, about IT principles? (1)					
Within your organisation, who are held accountable for the outcomes of decisions related to IT principles? (2)					

Q4.2 IT architecture concerns the technical guidelines and standards used to achieve a desired level of business/academic and technical integration and standardisation.

Please allocate 100 points to describe the proportion of the decision made and held accountable by each decision party? (Please be sure the total sum to 100%)

	Top Management (1)	Business Unit Leaders (2)	Business Process Owners & Key End Users (3)	Local IT Unit Leaders (4)	IT Executives - Shared Services (5)
Within your organisation, who typically make final decisions, individually or as part of a group, about IT architecture? (1)					
Within your organisation, who are held accountable for the outcomes of decisions related to IT architecture? (2)					

Q4.3 IT infrastructure strategies address shared IT services used by multiple systems and applications, providing a foundation for enterprise-wide IT capabilities (e.g., networks, shared data, and common applications).

Please allocate 100 points to describe the proportion of the decision made and held accountable by each decision party? (Please be sure the total sum to 100%)

	Top Management (1)	Business Unit Leaders (2)	Business Process Owners & Key End Users (3)	Local IT Unit Leaders (4)	IT Executives - Shared Services (5)
Within your organisation, who typically make final decisions, individually or as part of a group, about IT infrastructure strategies? (1)					
Within your organisation, who are held accountable for the outcomes of decisions related to IT infrastructure strategies? (2)					

Q4.4 Business application needs involve specifying the requirements of major IT applications and choosing applications to meet them.

Please allocate 100 points to describe the proportion of the decision made and held accountable by each decision party? (Please be sure the total sum to 100%)

	Top Management (1)	Business Unit Leaders (2)	Business Process Owners & Key End Users (3)	Local IT Unit Leaders (4)	IT Executives - Shared Services (5)
Within your organisation, who typically make final decisions, individually or as part of a group, about application needs? (1)					
Within your organisation, who are held accountable for the outcomes of decisions related to application needs? (2)					

Q4.5 IT investment and prioritization concerns how much the organisation spends on IT investments, what it spends on, and how competing needs are reconciled.

Please allocate 100 points to describe the proportion of the decision made and held accountable by each decision party? (Please be sure the total sum to 100%)

	Top Management (1)	Business Unit Leaders (2)	Business Process Owners & Key End Users (3)	Local IT Unit Leaders (4)	IT Executives - Shared Services (5)
Within your organisation, who typically make final decisions, individually or as part of a group, about IT investment and prioritization? (1)					
Within your organisation, who are held accountable for the outcomes of decisions related to IT investment and prioritization? (2)					

Q5 Your IT governance assessment

Q5.1 How often do you map your current IT governance structure onto your anticipated IT governance structure?

- ❍ Never (1)
- ❍ Quarterly (2)
- ❍ Biannually (3)
- ❍ Annually (4)
- ❍ Other (Please specify) (5) _____

Q5.2 How often do you utilise formal IT governance tools, such as an IT governance maturity assessment tool, to audit your IT governance metrics and accountabilities?

- ❍ Never (1)
- ❍ Quarterly (2)
- ❍ Biannually (3)
- ❍ Annually (4)
- ❍ Other (Please specify) (5) _____

Q5.3 How often do you evaluate your IT governance awareness and engagement?

- ❍ Never (1)
- ❍ Quarterly (2)
- ❍ Biannually (3)
- ❍ Annually (4)
- ❍ Other (Please specify) (5) _____

Q6 Your shared IT services monitoring mechanisms

Q6.1 To what extent do you agree or disagree with the following statements about reviewing and monitoring your shared IT services?

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
We have independent officer (e.g., internal auditor) responsible for monitoring compliance with the terms of the IT services agreement. (1)	❍	❍	❍	❍	❍	❍	❍
Our local IT/business unit takes an active and direct role in overseeing operating policy for the IT services. (2)	❍	❍	❍	❍	❍	❍	❍
We have a formal workgroup or focus group to review specific IT services initiatives. (3)	❍	❍	❍	❍	❍	❍	❍
We have a formal workgroup or focus group to monitor the development of IT services products. (4)	❍	❍	❍	❍	❍	❍	❍

Answer If In relation to IT shared services, what role does your bu... IT shared services client, e.g., Business Unit Is Selected

Q6.2 To what extent do you agree or disagree with the following statements about the interactions with your IT shared services provider?

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
We participate in our business with positive attitude. (1)	❍	❍	❍	❍	❍	❍	❍
We are very interested in each other's problems. (2)	❍	❍	❍	❍	❍	❍	❍
We encourage each other to solve business problems. (3)	❍	❍	❍	❍	❍	❍	❍
We share business knowledge of core business processes if necessary. (4)	❍	❍	❍	❍	❍	❍	❍
We exchange information that help the establishment of business planning. (5)	❍	❍	❍	❍	❍	❍	❍
We share environmental information that affects each other's business. (6)	❍	❍	❍	❍	❍	❍	❍

Answer If In relation to IT shared services, what role does your bu... IT shared services provider, e.g., Corporate IT Department or IT Organisation Is Selected

Q6.2 To what extent do you agree or disagree with the following statements about the interactions with your IT shared services client?

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
We participate in our business with positive attitude. (1)	❍	❍	❍	❍	❍	❍	❍
We are very interested in each other's problems. (2)	❍	❍	❍	❍	❍	❍	❍
We encourage each other to solve business problems. (3)	❍	❍	❍	❍	❍	❍	❍
We share business knowledge of core business processes if necessary. (4)	❍	❍	❍	❍	❍	❍	❍
We exchange information that help the establishment of business planning. (5)	❍	❍	❍	❍	❍	❍	❍
We share environmental information that affects each other's business. (6)	❍	❍	❍	❍	❍	❍	❍

Q6.3 To what extent do you agree or disagree with the following statements about the benchmarking your IT shared services arrangement?

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
We benchmark 'cost' targets against standards of best-practice. (1)	❍	❍	❍	❍	❍	❍	❍
We benchmark 'quality' targets against standards of best-practice. (2)	❍	❍	❍	❍	❍	❍	❍
We benchmark 'customer satisfaction' targets against standards of best-practice. (3)	❍	❍	❍	❍	❍	❍	❍
We benchmark 'timeliness' targets against standards of best-practice. (4)	❍	❍	❍	❍	❍	❍	❍

Q6.4 Does your organisation make use of any of the following IT governance frameworks?

	Do not use (1)	Use selected elements (2)	Use most or all elements (3)
Control Objectives for Information and related Technology (COBIT) (1)	❍	❍	❍
Information Technology Infrastructure Library (ITIL) (2)	❍	❍	❍
Information Security Management (ISO 27002) (3)	❍	❍	❍
Quality Management (ISO 9000) (4)	❍	❍	❍
Other (Please specify) (5)	❍	❍	❍

Q7 Your business value of IT

Q7.1 Please assess the following statements in relation to the extent that the decision to shared IT services is important to create overall business value?

	Not at all Important (1)	Very Unimportant (2)	Somewhat Unimportant (3)	Neither Important nor Unimportant (4)	Somewhat Important (5)	Very Important (6)	Extremely Important (7)
We are able to refocus on core business (1)	❍	❍	❍	❍	❍	❍	❍
We improve the capability of IT to support the needs of business operations (2)	❍	❍	❍	❍	❍	❍	❍
We share IT risks within approved risk limits (3)	❍	❍	❍	❍	❍	❍	❍
We improve the management of technology and human resources (4)	❍	❍	❍	❍	❍	❍	❍
We are able to support consolidation or integration (5)	❍	❍	❍	❍	❍	❍	❍
We reduce IT expenditure (6)	❍	❍	❍	❍	❍	❍	❍
We enhance economies of scale in IT resources (7)	❍	❍	❍	❍	❍	❍	❍
We reduce overcapacity by consolidation of systems (8)	❍	❍	❍	❍	❍	❍	❍
We leverage IT purchasing (9)	❍	❍	❍	❍	❍	❍	❍
We are able to establish a well-functioning IT environment (10)	❍	❍	❍	❍	❍	❍	❍

Q7.2 Please assess the following statements in relation to the extent that the decision to shared IT services has contributed to overall business value?

	Not at all Well (1)	Very Unwell (2)	Somewhat Unwell (3)	Neither Well nor Unwell (4)	Somewhat Well (5)	Very Well (6)	Extremely Very Well (7)
We are able to refocus on core business (1)	❍	❍	❍	❍	❍	❍	❍
We improve the capability of IT to support the needs of business operations (2)	❍	❍	❍	❍	❍	❍	❍
We share IT risks within approved risk limits (3)	❍	❍	❍	❍	❍	❍	❍
We improve the management of technology and human resources (4)	❍	❍	❍	❍	❍	❍	❍
We are able to support consolidation or integration (5)	❍	❍	❍	❍	❍	❍	❍
We reduce IT expenditure (6)	❍	❍	❍	❍	❍	❍	❍
We enhance economies of scale in IT resources (7)	❍	❍	❍	❍	❍	❍	❍
We reduce overcapacity by consolidation of systems (8)	❍	❍	❍	❍	❍	❍	❍
We leverage IT purchasing (9)	❍	❍	❍	❍	❍	❍	❍
We are able to establish a well-functioning IT environment (10)	❍	❍	❍	❍	❍	❍	❍

Q7.3 How important are each of the following as outcomes of your organisation's IT governance?

	Not at all Important (1)	Very Unimportant (2)	Somewhat Unimportant (3)	Neither Important nor Unimportant (4)	Somewhat Important (5)	Very Important (6)	Extremely Important (7)
Cost effective use of IT (1)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for growth (2)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for asset utilisation (3)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for business flexibility (4)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for compliance with legal and regulatory requirements (5)	❍	❍	❍	❍	❍	❍	❍
Improved service quality (6)	❍	❍	❍	❍	❍	❍	❍
Greater service responsiveness (7)	❍	❍	❍	❍	❍	❍	❍

Q7.4 How successful are each of the following outcomes in relation to your IT governance within your organisation?

	Extremely unsuccessful (1)	Very Unsuccessful (2)	Somewhat Unsuccessful (3)	Neither Successful nor Unsuccessful (4)	Somewhat Successful (5)	Very Successful (6)	Extremely Successful (7)
Cost effective use of IT (1)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for growth (2)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for asset utilisation (3)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for business flexibility (4)	❍	❍	❍	❍	❍	❍	❍
Effective use of IT for compliance with legal and regulatory requirements (5)	❍	❍	❍	❍	❍	❍	❍
Improved service quality (6)	❍	❍	❍	❍	❍	❍	❍
Greater service responsiveness (7)	❍	❍	❍	❍	❍	❍	❍

Q8 Your comment and participation

Q8.1 Do you have any additional comments on any of your answers above, or any shared IT services issues that you think are important but were not covered in this survey?

APPENDIX D1: CROSS-TABULATION OF IT PRINCIPLES

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Large	Provider	1 Business monarchy	Count	4	2	5	1	3	15
			Expected Count	1.8	2.0	9.2	1.3	.7	15.0
			% within PRIN	26.7%	13.3%	33.3%	6.7%	20.0%	100.0%
			% within SSDM	40.0%	18.2%	9.8%	14.3%	75.0%	18.1%
			Adjusted Residual	1.9	.0	-2.5	-.3	3.0	
		3 Federal	Count	2	7	40	6	1	56
			Expected Count	6.7	7.4	34.4	4.7	2.7	56.0
			% within PRIN	3.6%	12.5%	71.4%	10.7%	1.8%	100.0%
			% within SSDM	20.0%	63.6%	78.4%	85.7%	25.0%	67.5%
			Adjusted Residual	-3.4	-.3	2.7	1.1	-1.9	
		4 IT Duopoly	Count	3	2	6	0	0	11
			Expected Count	1.3	1.5	6.8	.9	.5	11.0
			% within PRIN	27.3%	18.2%	54.5%	0.0%	0.0%	100.0%
			% within SSDM	30.0%	18.2%	11.8%	0.0%	0.0%	13.3%
			Adjusted Residual	1.7	.5	-.5	-1.1	-.8	
		5 Feudal	Count	1	0	0	0	0	1
			Expected Count	.1	.1	.6	.1	.0	1.0
			% within PRIN	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	0.0%	0.0%	0.0%	0.0%	1.2%
			Adjusted Residual	2.7	-.4	-1.3	-.3	-.2	
		Total	Count	10	11	51	7	4	83
			Expected Count	10.0	11.0	51.0	7.0	4.0	83.0
			% within PRIN	12.0%	13.3%	61.4%	8.4%	4.8%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	2	1	2	1	0	6
			Expected Count	1.2	.2	3.4	1.0	.2	6.0
			% within PRIN	33.3%	16.7%	33.3%	16.7%	0.0%	100.0%
			% within SSDM	40.0%	100.0%	14.3%	25.0%	0.0%	24.0%
			Adjusted Residual	.9	1.8	-1.3	.1	-.6	
		3 Federal	Count	2	0	9	2	0	13
			Expected Count	2.6	.5	7.3	2.1	.5	13.0
			% within PRIN	15.4%	0.0%	69.2%	15.4%	0.0%	100.0%
			% within SSDM	40.0%	0.0%	64.3%	50.0%	0.0%	52.0%
			Adjusted Residual	-.6	-1.1	1.4	-.1	-1.1	
		4 IT Duopoly	Count	1	0	2	0	1	4
			Expected Count	.8	.2	2.2	.6	.2	4.0
			% within PRIN	25.0%	0.0%	50.0%	0.0%	25.0%	100.0%
			% within SSDM	20.0%	0.0%	14.3%	0.0%	100.0%	16.0%
			Adjusted Residual	.3	-.4	-.3	-1.0	2.3	
		5 Feudal	Count	0	0	1	1	0	2
			Expected Count	.4	.1	1.1	.3	.1	2.0
			% within PRIN	0.0%	0.0%	50.0%	50.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	7.1%	25.0%	0.0%	8.0%
			Adjusted Residual	-.7	-.3	-.2	1.4	-.3	
		Total	Count	5	1	14	4	1	25
			Expected Count	5.0	1.0	14.0	4.0	1.0	25.0
			% within PRIN	20.0%	4.0%	56.0%	16.0%	4.0%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	6	3	7	2	3	21
			Expected Count	2.9	2.3	12.6	2.1	1.0	21.0
			% within PRIN	28.6%	14.3%	33.3%	9.5%	14.3%	100.0%
			% within SSDM	40.0%	25.0%	10.8%	18.2%	60.0%	19.4%
			Adjusted Residual	2.2	.5	-2.8	-.1	2.3	
		3 Federal	Count	4	7	49	8	1	69
			Expected Count	9.6	7.7	41.5	7.0	3.2	69.0
			% within PRIN	5.8%	10.1%	71.0%	11.6%	1.4%	100.0%
			% within SSDM	26.7%	58.3%	75.4%	72.7%	20.0%	63.9%
			Adjusted Residual	-3.2	-.4	3.1	.6	-2.1	
		4 IT Duopoly	Count	4	2	8	0	1	15
			Expected Count	2.1	1.7	9.0	1.5	.7	15.0
			% within PRIN	26.7%	13.3%	53.3%	0.0%	6.7%	100.0%
			% within SSDM	26.7%	16.7%	12.3%	0.0%	20.0%	13.9%
			Adjusted Residual	1.5	.3	-.6	-1.4	.4	
		5 Feudal	Count	1	0	1	1	0	3
			Expected Count	.4	.3	1.8	.3	.1	3.0
			% within PRIN	33.3%	0.0%	33.3%	33.3%	0.0%	100.0%
			% within SSDM	6.7%	0.0%	1.5%	9.1%	0.0%	2.8%
			Adjusted Residual	1.0	-.6	-1.0	1.3	-.4	
		Total	Count	15	12	65	11	5	108
			Expected Count	15.0	12.0	65.0	11.0	5.0	108.0
			% within PRIN	13.9%	11.1%	60.2%	10.2%	4.6%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Small	Provider	1 Business monarchy	Count	7	1	2	1	2	13
			Expected Count	4.5	1.0	5.0	1.0	1.5	13.0
			% within PRIN	53.8%	7.7%	15.4%	7.7%	15.4%	100.0%
			% within SSDM	77.8%	50.0%	20.0%	50.0%	66.7%	50.0%
			Adjusted Residual	2.1	0.0	-2.4	0.0	.6	
		2 IT monarchy	Count	1	0	1	0	0	2
			Expected Count	.7	.2	.8	.2	.2	2.0
			% within PRIN	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	11.1%	0.0%	10.0%	0.0%	0.0%	7.7%
			Adjusted Residual	.5	-.4	.3	-.4	-.5	
		3 Federal	Count	1	0	3	1	1	6
			Expected Count	2.1	.5	2.3	.5	.7	6.0
			% within PRIN	16.7%	0.0%	50.0%	16.7%	16.7%	100.0%
			% within SSDM	11.1%	0.0%	30.0%	50.0%	33.3%	23.1%
			Adjusted Residual	-1.1	-.8	.7	.9	.4	
		4 IT Duopoly	Count	0	1	2	0	0	3
			Expected Count	1.0	.2	1.2	.2	.3	3.0
			% within PRIN	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	50.0%	20.0%	0.0%	0.0%	11.5%
			Adjusted Residual	-1.3	1.8	1.1	-.5	-.7	
		5 Feudal	Count	0	0	2	0	0	2
			Expected Count	.7	.2	.8	.2	.2	2.0
			% within PRIN	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	20.0%	0.0%	0.0%	7.7%
			Adjusted Residual	-1.1	-.4	1.9	-.4	-.5	
			Count	9	2	10	2	3	26
			Expected Count	9.0	2.0	10.0	2.0	3.0	26.0
			% within PRIN	34.6%	7.7%	38.5%	7.7%	11.5%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	9	8	13	6	3	39
			Expected Count	10.4	6.0	13.7	4.9	3.8	39.0
			% within PRIN	23.1%	20.5%	33.3%	15.4%	7.7%	100.0%
			% within SSDM	47.4%	72.7%	52.0%	66.7%	42.9%	54.9%
			Adjusted Residual	-.8	1.3	-.4	.8	-.7	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.8	.5	1.1	.4	.3	3.0
			% within PRIN	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	9.1%	8.0%	0.0%	0.0%	4.2%
			Adjusted Residual	-1.1	.9	1.2	-.7	-.6	
		3 Federal	Count	4	1	6	3	2	16
			Expected Count	4.3	2.5	5.6	2.0	1.6	16.0
			% within PRIN	25.0%	6.3%	37.5%	18.8%	12.5%	100.0%
			% within SSDM	21.1%	9.1%	24.0%	33.3%	28.6%	22.5%
			Adjusted Residual	-.2	-1.2	.2	.8	.4	
		4 IT Duopoly	Count	3	1	4	0	0	8
			Expected Count	2.1	1.2	2.8	1.0	.8	8.0
			% within PRIN	37.5%	12.5%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	15.8%	9.1%	16.0%	0.0%	0.0%	11.3%
			Adjusted Residual	.7	-.2	.9	-1.1	-1.0	
		5 Feudal	Count	3	0	0	0	2	5
			Expected Count	1.3	.8	1.8	.6	.5	5.0
			% within PRIN	60.0%	0.0%	0.0%	0.0%	40.0%	100.0%
			% within SSDM	15.8%	0.0%	0.0%	0.0%	28.6%	7.0%
			Adjusted Residual	1.7	-1.0	-1.7	-.9	2.3	
		Total	Count	19	11	25	9	7	71
			Expected Count	19.0	11.0	25.0	9.0	7.0	71.0
			% within PRIN	26.8%	15.5%	35.2%	12.7%	9.9%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	16	9	15	7	5	52
			Expected Count	15.0	7.0	18.8	5.9	5.4	52.0
			% within PRIN	30.8%	17.3%	28.8%	13.5%	9.6%	100.0%
			% within SSDM	57.1%	69.2%	42.9%	63.6%	50.0%	53.6%
			Adjusted Residual	.4	1.2	-1.6	.7	-.2	
		2 IT monarchy	Count	1	1	3	0	0	5
			Expected Count	1.4	.7	1.8	.6	.5	5.0
			% within PRIN	20.0%	20.0%	60.0%	0.0%	0.0%	100.0%
			% within SSDM	3.6%	7.7%	8.6%	0.0%	0.0%	5.2%
			Adjusted Residual	-.4	.4	1.1	-.8	-.8	
		3 Federal	Count	5	1	9	4	3	22
			Expected Count	6.4	2.9	7.9	2.5	2.3	22.0
			% within PRIN	22.7%	4.5%	40.9%	18.2%	13.6%	100.0%
			% within SSDM	17.9%	7.7%	25.7%	36.4%	30.0%	22.7%
			Adjusted Residual	-.7	-1.4	.5	1.2	.6	
		4 IT Duopoly	Count	3	2	6	0	0	11
			Expected Count	3.2	1.5	4.0	1.2	1.1	11.0
			% within PRIN	27.3%	18.2%	54.5%	0.0%	0.0%	100.0%
			% within SSDM	10.7%	15.4%	17.1%	0.0%	0.0%	11.3%
			Adjusted Residual	-.1	.5	1.4	-1.3	-1.2	
		5 Feudal	Count	3	0	2	0	2	7
			Expected Count	2.0	.9	2.5	.8	.7	7.0
			% within PRIN	42.9%	0.0%	28.6%	0.0%	28.6%	100.0%
			% within SSDM	10.7%	0.0%	5.7%	0.0%	20.0%	7.2%
			Adjusted Residual	.8	-1.1	-.4	-1.0	1.6	
		Total	Count	28	13	35	11	10	97
			Expected Count	28.0	13.0	35.0	11.0	10.0	97.0
			% within PRIN	28.9%	13.4%	36.1%	11.3%	10.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
All	Provider	1 Business monarchy	Count	11	3	7	2	5	28
			Expected Count	4.9	3.3	15.7	2.3	1.8	28.0
			% within PRIN	39.3%	10.7%	25.0%	7.1%	17.9%	100.0%
			% within SSDM	57.9%	23.1%	11.5%	22.2%	71.4%	25.7%
			Adjusted Residual	3.5	-.2	-3.8	-.2	2.9	
		2 IT monarchy	Count	1	0	1	0	0	2
			Expected Count	.3	.2	1.1	.2	.1	2.0
			% within PRIN	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	5.3%	0.0%	1.6%	0.0%	0.0%	1.8%
			Adjusted Residual	1.2	-.5	-.2	-.4	-.4	
		3 Federal	Count	3	7	43	7	2	62
			Expected Count	10.8	7.4	34.7	5.1	4.0	62.0
			% within PRIN	4.8%	11.3%	69.4%	11.3%	3.2%	100.0%
			% within SSDM	15.8%	53.8%	70.5%	77.8%	28.6%	56.9%
			Adjusted Residual	-4.0	-.2	3.2	1.3	-1.6	
		4 IT Duopoly	Count	3	3	8	0	0	14
			Expected Count	2.4	1.7	7.8	1.2	.9	14.0
			% within PRIN	21.4%	21.4%	57.1%	0.0%	0.0%	100.0%
			% within SSDM	15.8%	23.1%	13.1%	0.0%	0.0%	12.8%
			Adjusted Residual	.4	1.2	.1	-1.2	-1.0	
		5 Feudal	Count	1	0	2	0	0	3
			Expected Count	.5	.4	1.7	.2	.2	3.0
			% within PRIN	33.3%	0.0%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	5.3%	0.0%	3.3%	0.0%	0.0%	2.8%
			Adjusted Residual	.7	-.6	.4	-.5	-.5	
		Total	Count	19	13	61	9	7	109
			Expected Count	19.0	13.0	61.0	9.0	7.0	109.0
			% within PRIN	17.4%	11.9%	56.0%	8.3%	6.4%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	11	9	15	7	3	45
			Expected Count	11.3	5.6	18.3	6.1	3.8	45.0
			% within PRIN	24.4%	20.0%	33.3%	15.6%	6.7%	100.0%
			% within SSDM	45.8%	75.0%	38.5%	53.8%	37.5%	46.9%
			Adjusted Residual	-.1	2.1	-1.4	.5	-.6	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.8	.4	1.2	.4	.3	3.0
			% within PRIN	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	8.3%	5.1%	0.0%	0.0%	3.1%
			Adjusted Residual	-1.0	1.1	.9	-.7	-.5	
		3 Federal	Count	6	1	15	5	2	29
			Expected Count	7.3	3.6	11.8	3.9	2.4	29.0
			% within PRIN	20.7%	3.4%	51.7%	17.2%	6.9%	100.0%
			% within SSDM	25.0%	8.3%	38.5%	38.5%	25.0%	30.2%
			Adjusted Residual	-.6	-1.8	1.5	.7	-.3	
		4 IT Duopoly	Count	4	1	6	0	1	12
			Expected Count	3.0	1.5	4.9	1.6	1.0	12.0
			% within PRIN	33.3%	8.3%	50.0%	0.0%	8.3%	100.0%
			% within SSDM	16.7%	8.3%	15.4%	0.0%	12.5%	12.5%
			Adjusted Residual	.7	-.5	.7	-1.5	0.0	
		5 Feudal	Count	3	0	1	1	2	7
			Expected Count	1.8	.9	2.8	.9	.6	7.0
			% within PRIN	42.9%	0.0%	14.3%	14.3%	28.6%	100.0%
			% within SSDM	12.5%	0.0%	2.6%	7.7%	25.0%	7.3%
			Adjusted Residual	1.1	-1.0	-1.5	.1	2.0	
		Total	Count	24	12	39	13	8	96
			Expected Count	24.0	12.0	39.0	13.0	8.0	96.0
			% within PRIN	25.0%	12.5%	40.6%	13.5%	8.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	22	12	22	9	8	73
			Expected Count	15.3	8.9	35.6	7.8	5.3	73.0
			% within PRIN	30.1%	16.4%	30.1%	12.3%	11.0%	100.0%
			% within SSDM	51.2%	48.0%	22.0%	40.9%	53.3%	35.6%
			Adjusted Residual	2.4	1.4	-4.0	.5	1.5	
		2 IT monarchy	Count	1	1	3	0	0	5
			Expected Count	1.0	.6	2.4	.5	.4	5.0
			% within PRIN	20.0%	20.0%	60.0%	0.0%	0.0%	100.0%
			% within SSDM	2.3%	4.0%	3.0%	0.0%	0.0%	2.4%
			Adjusted Residual	-.1	.5	.5	-.8	-.6	
		3 Federal	Count	9	8	58	12	4	91
			Expected Count	19.1	11.1	44.4	9.8	6.7	91.0
			% within PRIN	9.9%	8.8%	63.7%	13.2%	4.4%	100.0%
			% within SSDM	20.9%	32.0%	58.0%	54.5%	26.7%	44.4%
			Adjusted Residual	-3.5	-1.3	3.8	1.0	-1.4	
		4 IT Duopoly	Count	7	4	14	0	1	26
			Expected Count	5.5	3.2	12.7	2.8	1.9	26.0
			% within PRIN	26.9%	15.4%	53.8%	0.0%	3.8%	100.0%
			% within SSDM	16.3%	16.0%	14.0%	0.0%	6.7%	12.7%
			Adjusted Residual	.8	.5	.6	-1.9	-.7	
		5 Feudal	Count	4	0	3	1	2	10
			Expected Count	2.1	1.2	4.9	1.1	.7	10.0
			% within PRIN	40.0%	0.0%	30.0%	10.0%	20.0%	100.0%
			% within SSDM	9.3%	0.0%	3.0%	4.5%	13.3%	4.9%
			Adjusted Residual	1.5	-1.2	-1.2	-.1	1.6	
		Total	Count	43	25	100	22	15	205
			Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
			% within PRIN	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX D2: CROSS-TABULATION OF IT INVESTMENT

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Large	Provider	1 Business monarchy	Count	3	4	6	1	3	17
			Expected Count	2.0	2.3	10.4	1.4	.8	17.0
			% within INVE	17.6%	23.5%	35.3%	5.9%	17.6%	100.0%
			% within SSDM	30.0%	36.4%	11.8%	14.3%	75.0%	20.5%
			Adjusted Residual	.8	1.4	-2.5	-.4	2.8	
		3 Federal	Count	4	7	34	5	1	51
			Expected Count	6.1	6.8	31.3	4.3	2.5	51.0
			% within INVE	7.8%	13.7%	66.7%	9.8%	2.0%	100.0%
			% within SSDM	40.0%	63.6%	66.7%	71.4%	25.0%	61.4%
			Adjusted Residual	-1.5	.2	1.2	.6	-1.5	
		4 IT Duopoly	Count	2	0	10	1	0	13
			Expected Count	1.6	1.7	8.0	1.1	.6	13.0
			% within INVE	15.4%	0.0%	76.9%	7.7%	0.0%	100.0%
			% within SSDM	20.0%	0.0%	19.6%	14.3%	0.0%	15.7%
			Adjusted Residual	.4	-1.5	1.2	-.1	-.9	
		5 Feudal	Count	1	0	1	0	0	2
			Expected Count	.2	.3	1.2	.2	.1	2.0
			% within INVE	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	0.0%	2.0%	0.0%	0.0%	2.4%
			Adjusted Residual	1.7	-.6	-.3	-.4	-.3	
		Total	Count	10	11	51	7	4	83
			Expected Count	10.0	11.0	51.0	7.0	4.0	83.0
			% within INVE	12.0%	13.3%	61.4%	8.4%	4.8%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	2 Client	1 Business monarchy	Count	3	0	3	3	0	9
			Expected Count	1.8	.4	5.0	1.4	.4	9.0
			% within INVE	33.3%	0.0%	33.3%	33.3%	0.0%	100.0%
			% within SSDM	60.0%	0.0%	21.4%	75.0%	0.0%	36.0%
			Adjusted Residual	1.3	-.8	-1.7	1.8	-.8	
		3 Federal	Count	1	1	8	0	1	11
			Expected Count	2.2	.4	6.2	1.8	.4	11.0
			% within INVE	9.1%	9.1%	72.7%	0.0%	9.1%	100.0%
			% within SSDM	20.0%	100.0%	57.1%	0.0%	100.0%	44.0%
			Adjusted Residual	-1.2	1.2	1.5	-1.9	1.2	
		4 IT Duopoly	Count	1	0	2	1	0	4
			Expected Count	.8	.2	2.2	.6	.2	4.0
			% within INVE	25.0%	0.0%	50.0%	25.0%	0.0%	100.0%
			% within SSDM	20.0%	0.0%	14.3%	25.0%	0.0%	16.0%
			Adjusted Residual	.3	-.4	-.3	.5	-.4	
		5 Feudal	Count	0	0	1	0	0	1
			Expected Count	.2	.0	.6	.2	.0	1.0
			% within INVE	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	7.1%	0.0%	0.0%	4.0%
			Adjusted Residual	-.5	-.2	.9	-.4	-.2	
		Total	Count	5	1	14	4	1	25
			Expected Count	5.0	1.0	14.0	4.0	1.0	25.0
			% within INVE	20.0%	4.0%	56.0%	16.0%	4.0%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	6	4	9	4	3	26
			Expected Count	3.6	2.9	15.6	2.6	1.2	26.0
			% within INVE	23.1%	15.4%	34.6%	15.4%	11.5%	100.0%
			% within SSDM	40.0%	33.3%	13.8%	36.4%	60.0%	24.1%
			Adjusted Residual	1.6	.8	-3.1	1.0	1.9	
		3 Federal	Count	5	8	42	5	2	62
			Expected Count	8.6	6.9	37.3	6.3	2.9	62.0
			% within INVE	8.1%	12.9%	67.7%	8.1%	3.2%	100.0%
			% within SSDM	33.3%	66.7%	64.6%	45.5%	40.0%	57.4%
			Adjusted Residual	-2.0	.7	1.9	-.8	-.8	
		4 IT Duopoly	Count	3	0	12	2	0	17
			Expected Count	2.4	1.9	10.2	1.7	.8	17.0
			% within INVE	17.6%	0.0%	70.6%	11.8%	0.0%	100.0%
			% within SSDM	20.0%	0.0%	18.5%	18.2%	0.0%	15.7%
			Adjusted Residual	.5	-1.6	1.0	.2	-1.0	
		5 Feudal	Count	1	0	2	0	0	3
			Expected Count	.4	.3	1.8	.3	.1	3.0
			% within INVE	33.3%	0.0%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	6.7%	0.0%	3.1%	0.0%	0.0%	2.8%
			Adjusted Residual	1.0	-.6	.2	-.6	-.4	
		Total	Count	15	12	65	11	5	108
			Expected Count	15.0	12.0	65.0	11.0	5.0	108.0
			% within INVE	13.9%	11.1%	60.2%	10.2%	4.6%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Small	Provider	1 Business monarchy	Count	9	1	4	0	2	16
			Expected Count	5.5	1.2	6.2	1.2	1.8	16.0
			% within INVE	56.3%	6.3%	25.0%	0.0%	12.5%	100.0%
			% within SSDM	100.0%	50.0%	40.0%	0.0%	66.7%	61.5%
			Adjusted Residual	2.9	-.3	-1.8	-1.9	.2	
		2 IT monarchy	Count	0	0	1	0	0	1
			Expected Count	.3	.1	.4	.1	.1	1.0
			% within INVE	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	10.0%	0.0%	0.0%	3.8%
			Adjusted Residual	-.7	-.3	1.3	-.3	-.4	
		3 Federal	Count	0	0	4	1	1	6
			Expected Count	2.1	.5	2.3	.5	.7	6.0
			% within INVE	0.0%	0.0%	66.7%	16.7%	16.7%	100.0%
			% within SSDM	0.0%	0.0%	40.0%	50.0%	33.3%	23.1%
			Adjusted Residual	-2.0	-.8	1.6	.9	.4	
		4 IT Duopoly	Count	0	1	1	0	0	2
			Expected Count	.7	.2	.8	.2	.2	2.0
			% within INVE	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	50.0%	10.0%	0.0%	0.0%	7.7%
			Adjusted Residual	-1.1	2.3	.3	-.4	-.5	
		5 Feudal	Count	0	0	0	1	0	1
			Expected Count	.3	.1	.4	.1	.1	1.0
			% within INVE	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	0.0%	50.0%	0.0%	3.8%
			Adjusted Residual	-.7	-.3	-.8	3.5	-.4	
		Total	Count	9	2	10	2	3	26
			Expected Count	9.0	2.0	10.0	2.0	3.0	26.0
			% within INVE	34.6%	7.7%	38.5%	7.7%	11.5%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	10	7	16	6	4	43
			Expected Count	11.5	6.7	15.1	5.5	4.2	43.0
			% within INVE	23.3%	16.3%	37.2%	14.0%	9.3%	100.0%
			% within SSDM	52.6%	63.6%	64.0%	66.7%	57.1%	60.6%
			Adjusted Residual	-.8	.2	.4	.4	-.2	
		2 IT monarchy	Count	0	1	1	0	0	2
			Expected Count	.5	.3	.7	.3	.2	2.0
			% within INVE	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	9.1%	4.0%	0.0%	0.0%	2.8%
			Adjusted Residual	-.9	1.4	.4	-.5	-.5	
		3 Federal	Count	4	1	4	3	2	14
			Expected Count	3.7	2.2	4.9	1.8	1.4	14.0
			% within INVE	28.6%	7.1%	28.6%	21.4%	14.3%	100.0%
			% within SSDM	21.1%	9.1%	16.0%	33.3%	28.6%	19.7%
			Adjusted Residual	.2	-1.0	-.6	1.1	.6	
		4 IT Duopoly	Count	3	1	4	0	0	8
			Expected Count	2.1	1.2	2.8	1.0	.8	8.0
			% within INVE	37.5%	12.5%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	15.8%	9.1%	16.0%	0.0%	0.0%	11.3%
			Adjusted Residual	.7	-.2	.9	-1.1	-1.0	
		5 Feudal	Count	2	1	0	0	1	4
			Expected Count	1.1	.6	1.4	.5	.4	4.0
			% within INVE	50.0%	25.0%	0.0%	0.0%	25.0%	100.0%
			% within SSDM	10.5%	9.1%	0.0%	0.0%	14.3%	5.6%
			Adjusted Residual	1.1	.5	-1.5	-.8	1.0	
		Total	Count	19	11	25	9	7	71
			Expected Count	19.0	11.0	25.0	9.0	7.0	71.0
			% within INVE	26.8%	15.5%	35.2%	12.7%	9.9%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	19	8	20	6	6	59
			Expected Count	17.0	7.9	21.3	6.7	6.1	59.0
			% within INVE	32.2%	13.6%	33.9%	10.2%	10.2%	100.0%
			% within SSDM	67.9%	61.5%	57.1%	54.5%	60.0%	60.8%
			Adjusted Residual	.9	.1	-.6	-.5	-.1	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.9	.4	1.1	.3	.3	3.0
			% within INVE	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	7.7%	5.7%	0.0%	0.0%	3.1%
			Adjusted Residual	-1.1	1.0	1.1	-.6	-.6	
		3 Federal	Count	4	1	8	4	3	20
			Expected Count	5.8	2.7	7.2	2.3	2.1	20.0
			% within INVE	20.0%	5.0%	40.0%	20.0%	15.0%	100.0%
			% within SSDM	14.3%	7.7%	22.9%	36.4%	30.0%	20.6%
			Adjusted Residual	-1.0	-1.2	.4	1.4	.8	
		4 IT Duopoly	Count	3	2	5	0	0	10
			Expected Count	2.9	1.3	3.6	1.1	1.0	10.0
			% within INVE	30.0%	20.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	10.7%	15.4%	14.3%	0.0%	0.0%	10.3%
			Adjusted Residual	.1	.6	1.0	-1.2	-1.1	
		5 Feudal	Count	2	1	0	1	1	5
			Expected Count	1.4	.7	1.8	.6	.5	5.0
			% within INVE	40.0%	20.0%	0.0%	20.0%	20.0%	100.0%
			% within SSDM	7.1%	7.7%	0.0%	9.1%	10.0%	5.2%
			Adjusted Residual	.6	.4	-1.7	.6	.7	
		Total	Count	28	13	35	11	10	97
			Expected Count	28.0	13.0	35.0	11.0	10.0	97.0
			% within INVE	28.9%	13.4%	36.1%	11.3%	10.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service Corporate		Supra-Corporate	Iso-Corporate	Total
All	Provider	1 Business monarchy	Count	12	5	10	1	5	33
			Expected Count	5.8	3.9	18.5	2.7	2.1	33.0
			% within INVE	36.4%	15.2%	30.3%	3.0%	15.2%	100.0%
			% within SSDM	63.2%	38.5%	16.4%	11.1%	71.4%	30.3%
			Adjusted Residual	3.4	.7	-3.6	-1.3	2.4	
		2 IT monarchy	Count	0	0	1	0	0	1
			Expected Count	.2	.1	.6	.1	.1	1.0
			% within INVE	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	1.6%	0.0%	0.0%	.9%
			Adjusted Residual	-.5	-.4	.9	-.3	-.3	
		3 Federal	Count	4	7	38	6	2	57
			Expected Count	9.9	6.8	31.9	4.7	3.7	57.0
			% within INVE	7.0%	12.3%	66.7%	10.5%	3.5%	100.0%
			% within SSDM	21.1%	53.8%	62.3%	66.7%	28.6%	52.3%
			Adjusted Residual	-3.0	.1	2.4	.9	-1.3	
		4 IT Duopoly	Count	2	1	11	1	0	15
			Expected Count	2.6	1.8	8.4	1.2	1.0	15.0
			% within INVE	13.3%	6.7%	73.3%	6.7%	0.0%	100.0%
			% within SSDM	10.5%	7.7%	18.0%	11.1%	0.0%	13.8%
			Adjusted Residual	-.5	-.7	1.5	-.2	-1.1	
		5 Feudal	Count	1	0	1	1	0	3
			Expected Count	.5	.4	1.7	.2	.2	3.0
			% within INVE	33.3%	0.0%	33.3%	33.3%	0.0%	100.0%
			% within SSDM	5.3%	0.0%	1.6%	11.1%	0.0%	2.8%
			Adjusted Residual	.7	-.6	-.8	1.6	-.5	
		Total	Count	19	13	61	9	7	109
			Expected Count	19.0	13.0	61.0	9.0	7.0	109.0
			% within INVE	17.4%	11.9%	56.0%	8.3%	6.4%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	13	7	19	9	4	52
			Expected Count	13.0	6.5	21.1	7.0	4.3	52.0
			% within INVE	25.0%	13.5%	36.5%	17.3%	7.7%	100.0%
			% within SSDM	54.2%	58.3%	48.7%	69.2%	50.0%	54.2%
			Adjusted Residual	0.0	.3	-.9	1.2	-.2	
		2 IT monarchy	Count	0	1	1	0	0	2
			Expected Count	.5	.3	.8	.3	.2	2.0
			% within INVE	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	8.3%	2.6%	0.0%	0.0%	2.1%
			Adjusted Residual	-.8	1.6	.3	-.6	-.4	
		3 Federal	Count	5	2	12	3	3	25
			Expected Count	6.3	3.1	10.2	3.4	2.1	25.0
			% within INVE	20.0%	8.0%	48.0%	12.0%	12.0%	100.0%
			% within SSDM	20.8%	16.7%	30.8%	23.1%	37.5%	26.0%
			Adjusted Residual	-.7	-.8	.9	-.3	.8	
		4 IT Duopoly	Count	4	1	6	1	0	12
			Expected Count	3.0	1.5	4.9	1.6	1.0	12.0
			% within INVE	33.3%	8.3%	50.0%	8.3%	0.0%	100.0%
			% within SSDM	16.7%	8.3%	15.4%	7.7%	0.0%	12.5%
			Adjusted Residual	.7	-.5	.7	-.6	-1.1	
		5 Feudal	Count	2	1	1	0	1	5
			Expected Count	1.3	.6	2.0	.7	.4	5.0
			% within INVE	40.0%	20.0%	20.0%	0.0%	20.0%	100.0%
			% within SSDM	8.3%	8.3%	2.6%	0.0%	12.5%	5.2%
			Adjusted Residual	.8	.5	-1.0	-.9	1.0	
		Total	Count	24	12	39	13	8	96
			Expected Count	24.0	12.0	39.0	13.0	8.0	96.0
			% within INVE	25.0%	12.5%	40.6%	13.5%	8.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	25	12	29	10	9	85
			Expected Count	17.8	10.4	41.5	9.1	6.2	85.0
			% within INVE	29.4%	14.1%	34.1%	11.8%	10.6%	100.0%
			% within SSDM	58.1%	48.0%	29.0%	45.5%	60.0%	41.5%
			Adjusted Residual	2.5	.7	-3.5	.4	1.5	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.6	.4	1.5	.3	.2	3.0
			% within INVE	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	4.0%	2.0%	0.0%	0.0%	1.5%
			Adjusted Residual	-.9	1.1	.6	-.6	-.5	
		3 Federal	Count	9	9	50	9	5	82
			Expected Count	17.2	10.0	40.0	8.8	6.0	82.0
			% within INVE	11.0%	11.0%	61.0%	11.0%	6.1%	100.0%
			% within SSDM	20.9%	36.0%	50.0%	40.9%	33.3%	40.0%
			Adjusted Residual	-2.9	-.4	2.9	.1	-.5	
		4 IT Duopoly	Count	6	2	17	2	0	27
			Expected Count	5.7	3.3	13.2	2.9	2.0	27.0
			% within INVE	22.2%	7.4%	63.0%	7.4%	0.0%	100.0%
			% within SSDM	14.0%	8.0%	17.0%	9.1%	0.0%	13.2%
			Adjusted Residual	.2	-.8	1.6	-.6	-1.6	
		5 Feudal	Count	3	1	2	1	1	8
			Expected Count	1.7	1.0	3.9	.9	.6	8.0
			% within INVE	37.5%	12.5%	25.0%	12.5%	12.5%	100.0%
			% within SSDM	7.0%	4.0%	2.0%	4.5%	6.7%	3.9%
			Adjusted Residual	1.2	.0	-1.4	.2	.6	
		Total	Count	43	25	100	22	15	205
			Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
			% within INVE	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX D3: CROSS-TABULATION OF BUSINESS APPLICATION NEEDS

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Large	Provider	1 Business monarchy	Count	2	2	5	1	3	13
			Expected Count	1.6	1.7	8.0	1.1	.6	13.0
			% within APPL	15.4%	15.4%	38.5%	7.7%	23.1%	100.0%
			% within SSDM	20.0%	18.2%	9.8%	14.3%	75.0%	15.7%
			Adjusted Residual	.4	.2	-1.9	-.1	3.3	
		2 IT monarchy	Count	0	0	2	0	0	2
			Expected Count	.2	.3	1.2	.2	.1	2.0
			% within APPL	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	3.9%	0.0%	0.0%	2.4%
			Adjusted Residual	-.5	-.6	1.1	-.4	-.3	
		3 Federal	Count	4	8	38	6	0	56
			Expected Count	6.7	7.4	34.4	4.7	2.7	56.0
			% within APPL	7.1%	14.3%	67.9%	10.7%	0.0%	100.0%
			% within SSDM	40.0%	72.7%	74.5%	85.7%	0.0%	67.5%
			Adjusted Residual	-2.0	.4	1.7	1.1	-3.0	
		4 IT Duopoly	Count	2	1	4	0	1	8
			Expected Count	1.0	1.1	4.9	.7	.4	8.0
			% within APPL	25.0%	12.5%	50.0%	0.0%	12.5%	100.0%
			% within SSDM	20.0%	9.1%	7.8%	0.0%	25.0%	9.6%
			Adjusted Residual	1.2	-.1	-.7	-.9	1.1	
		5 Feudal	Count	2	0	2	0	0	4
			Expected Count	.5	.5	2.5	.3	.2	4.0
			% within APPL	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	20.0%	0.0%	3.9%	0.0%	0.0%	4.8%
			Adjusted Residual	2.4	-.8	-.5	-.6	-.5	
		Total	Count	10	11	51	7	4	83
			Expected Count	10.0	11.0	51.0	7.0	4.0	83.0
			% within APPL	12.0%	13.3%	61.4%	8.4%	4.8%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	2	0	2	0	0	4
			Expected Count	.8	.2	2.2	.6	.2	4.0
			% within APPL	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	40.0%	0.0%	14.3%	0.0%	0.0%	16.0%
			Adjusted Residual	1.6	-.4	-.3	-1.0	-.4	
		3 Federal	Count	2	0	8	3	1	14
			Expected Count	2.8	.6	7.8	2.2	.6	14.0
			% within APPL	14.3%	0.0%	57.1%	21.4%	7.1%	100.0%
			% within SSDM	40.0%	0.0%	57.1%	75.0%	100.0%	56.0%
			Adjusted Residual	-.8	-1.2	.1	.8	.9	
		4 IT Duopoly	Count	0	0	2	0	0	2
			Expected Count	.4	.1	1.1	.3	.1	2.0
			% within APPL	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	14.3%	0.0%	0.0%	8.0%
			Adjusted Residual	-.7	-.3	1.3	-.6	-.3	
		5 Feudal	Count	1	1	2	1	0	5
			Expected Count	1.0	.2	2.8	.8	.2	5.0
			% within APPL	20.0%	20.0%	40.0%	20.0%	0.0%	100.0%
			% within SSDM	20.0%	100.0%	14.3%	25.0%	0.0%	20.0%
			Adjusted Residual	0.0	2.0	-.8	.3	-.5	
		Total	Count	5	1	14	4	1	25
			Expected Count	5.0	1.0	14.0	4.0	1.0	25.0
			% within APPL	20.0%	4.0%	56.0%	16.0%	4.0%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	4	2	7	1	3	17
			Expected Count	2.4	1.9	10.2	1.7	.8	17.0
			% within APPL	23.5%	11.8%	41.2%	5.9%	17.6%	100.0%
			% within SSDM	26.7%	16.7%	10.8%	9.1%	60.0%	15.7%
			Adjusted Residual	1.3	.1	-1.7	-.6	2.8	
		2 IT monarchy	Count	0	0	2	0	0	2
			Expected Count	.3	.2	1.2	.2	.1	2.0
			% within APPL	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	3.1%	0.0%	0.0%	1.9%
			Adjusted Residual	-.6	-.5	1.2	-.5	-.3	
		3 Federal	Count	6	8	46	9	1	70
			Expected Count	9.7	7.8	42.1	7.1	3.2	70.0
			% within APPL	8.6%	11.4%	65.7%	12.9%	1.4%	100.0%
			% within SSDM	40.0%	66.7%	70.8%	81.8%	20.0%	64.8%
			Adjusted Residual	-2.2	.1	1.6	1.2	-2.1	
		4 IT Duopoly	Count	2	1	6	0	1	10
			Expected Count	1.4	1.1	6.0	1.0	.5	10.0
			% within APPL	20.0%	10.0%	60.0%	0.0%	10.0%	100.0%
			% within SSDM	13.3%	8.3%	9.2%	0.0%	20.0%	9.3%
			Adjusted Residual	.6	-.1	.0	-1.1	.8	
		5 Feudal	Count	3	1	4	1	0	9
			Expected Count	1.3	1.0	5.4	.9	.4	9.0
			% within APPL	33.3%	11.1%	44.4%	11.1%	0.0%	100.0%
			% within SSDM	20.0%	8.3%	6.2%	9.1%	0.0%	8.3%
			Adjusted Residual	1.8	0.0	-1.0	.1	-.7	
		Total	Count	15	12	65	11	5	108
			Expected Count	15.0	12.0	65.0	11.0	5.0	108.0
			% within APPL	13.9%	11.1%	60.2%	10.2%	4.6%	100.0%

Size	Relationship		Shared Services Delivery Arrangement (SSDA)					
			Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
		% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Small	Provider	1 Business monarchy	Count	7	1	1	0	2	11
			Expected Count	3.8	.8	4.2	.8	1.3	11.0
			% within APPL	63.6%	9.1%	9.1%	0.0%	18.2%	100.0%
			% within SSDM	77.8%	50.0%	10.0%	0.0%	66.7%	42.3%
			Adjusted Residual	2.7	.2	-2.6	-1.3	.9	
		2 IT monarchy	Count	1	0	1	0	1	3
			Expected Count	1.0	.2	1.2	.2	.3	3.0
			% within APPL	33.3%	0.0%	33.3%	0.0%	33.3%	100.0%
			% within SSDM	11.1%	0.0%	10.0%	0.0%	33.3%	11.5%
			Adjusted Residual	.0	-.5	-.2	-.5	1.3	
		3 Federal	Count	1	0	6	1	0	8
			Expected Count	2.8	.6	3.1	.6	.9	8.0
			% within APPL	12.5%	0.0%	75.0%	12.5%	0.0%	100.0%
			% within SSDM	11.1%	0.0%	60.0%	50.0%	0.0%	30.8%
			Adjusted Residual	-1.6	-1.0	2.6	.6	-1.2	
		4 IT Duopoly	Count	0	1	0	0	0	1
			Expected Count	.3	.1	.4	.1	.1	1.0
			% within APPL	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	50.0%	0.0%	0.0%	0.0%	3.8%
			Adjusted Residual	-.7	3.5	-.8	-.3	-.4	
		5 Feudal	Count	0	0	2	1	0	3
			Expected Count	1.0	.2	1.2	.2	.3	3.0
			% within APPL	0.0%	0.0%	66.7%	33.3%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	20.0%	50.0%	0.0%	11.5%
			Adjusted Residual	-1.3	-.5	1.1	1.8	-.7	
		Total	Count	9	2	10	2	3	26
			Expected Count	9.0	2.0	10.0	2.0	3.0	26.0
			% within APPL	34.6%	7.7%	38.5%	7.7%	11.5%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	10	7	12	5	3	37
			Expected Count	9.9	5.7	13.0	4.7	3.6	37.0
			% within APPL	27.0%	18.9%	32.4%	13.5%	8.1%	100.0%
			% within SSDM	52.6%	63.6%	48.0%	55.6%	42.9%	52.1%
			Adjusted Residual	.1	.8	-.5	.2	-.5	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.8	.5	1.1	.4	.3	3.0
			% within APPL	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	9.1%	8.0%	0.0%	0.0%	4.2%
			Adjusted Residual	-1.1	.9	1.2	-.7	-.6	
		3 Federal	Count	6	1	8	3	2	20
			Expected Count	5.4	3.1	7.0	2.5	2.0	20.0
			% within APPL	30.0%	5.0%	40.0%	15.0%	10.0%	100.0%
			% within SSDM	31.6%	9.1%	32.0%	33.3%	28.6%	28.2%
			Adjusted Residual	.4	-1.5	.5	.4	.0	
		4 IT Duopoly	Count	0	1	3	1	0	5
			Expected Count	1.3	.8	1.8	.6	.5	5.0
			% within APPL	0.0%	20.0%	60.0%	20.0%	0.0%	100.0%
			% within SSDM	0.0%	9.1%	12.0%	11.1%	0.0%	7.0%
			Adjusted Residual	-1.4	.3	1.2	.5	-.8	
		5 Feudal	Count	3	1	0	0	2	6
			Expected Count	1.6	.9	2.1	.8	.6	6.0
			% within APPL	50.0%	16.7%	0.0%	0.0%	33.3%	100.0%
			% within SSDM	15.8%	9.1%	0.0%	0.0%	28.6%	8.5%
			Adjusted Residual	1.3	.1	-1.9	-1.0	2.0	
		Total	Count	19	11	25	9	7	71
			Expected Count	19.0	11.0	25.0	9.0	7.0	71.0
			% within APPL	26.8%	15.5%	35.2%	12.7%	9.9%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	17	8	13	5	5	48
			Expected Count	13.9	6.4	17.3	5.4	4.9	48.0
			% within APPL	35.4%	16.7%	27.1%	10.4%	10.4%	100.0%
			% within SSDM	60.7%	61.5%	37.1%	45.5%	50.0%	49.5%
			Adjusted Residual	1.4	.9	-1.8	-.3	.0	
		2 IT monarchy	Count	1	1	3	0	1	6
			Expected Count	1.7	.8	2.2	.7	.6	6.0
			% within APPL	16.7%	16.7%	50.0%	0.0%	16.7%	100.0%
			% within SSDM	3.6%	7.7%	8.6%	0.0%	10.0%	6.2%
			Adjusted Residual	-.7	.2	.7	-.9	.5	
		3 Federal	Count	7	1	14	4	2	28
			Expected Count	8.1	3.8	10.1	3.2	2.9	28.0
			% within APPL	25.0%	3.6%	50.0%	14.3%	7.1%	100.0%
			% within SSDM	25.0%	7.7%	40.0%	36.4%	20.0%	28.9%
			Adjusted Residual	-.5	-1.8	1.8	.6	-.7	
		4 IT Duopoly	Count	0	2	3	1	0	6
			Expected Count	1.7	.8	2.2	.7	.6	6.0
			% within APPL	0.0%	33.3%	50.0%	16.7%	0.0%	100.0%
			% within SSDM	0.0%	15.4%	8.6%	9.1%	0.0%	6.2%
			Adjusted Residual	-1.6	1.5	.7	.4	-.9	
		5 Feudal	Count	3	1	2	1	2	9
			Expected Count	2.6	1.2	3.2	1.0	.9	9.0
			% within APPL	33.3%	11.1%	22.2%	11.1%	22.2%	100.0%
			% within SSDM	10.7%	7.7%	5.7%	9.1%	20.0%	9.3%
			Adjusted Residual	.3	-.2	-.9	.0	1.2	
		Total	Count	28	13	35	11	10	97
			Expected Count	28.0	13.0	35.0	11.0	10.0	97.0
			% within APPL	28.9%	13.4%	36.1%	11.3%	10.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
All	Provider	1 Business monarchy	Count	9	3	6	1	5	24
			Expected Count	4.2	2.9	13.4	2.0	1.5	24.0
			% within APPL	37.5%	12.5%	25.0%	4.2%	20.8%	100.0%
			% within SSDM	47.4%	23.1%	9.8%	11.1%	71.4%	22.0%
			Adjusted Residual	2.9	.1	-3.5	-.8	3.3	
		2 IT monarchy	Count	1	0	3	0	1	5
			Expected Count	.9	.6	2.8	.4	.3	5.0
			% within APPL	20.0%	0.0%	60.0%	0.0%	20.0%	100.0%
			% within SSDM	5.3%	0.0%	4.9%	0.0%	14.3%	4.6%
			Adjusted Residual	.2	-.8	.2	-.7	1.3	
		3 Federal	Count	5	8	44	7	0	64
			Expected Count	11.2	7.6	35.8	5.3	4.1	64.0
			% within APPL	7.8%	12.5%	68.8%	10.9%	0.0%	100.0%
			% within SSDM	26.3%	61.5%	72.1%	77.8%	0.0%	58.7%
			Adjusted Residual	-3.2	.2	3.2	1.2	-3.3	
		4 IT Duopoly	Count	2	2	4	0	1	9
			Expected Count	1.6	1.1	5.0	.7	.6	9.0
			% within APPL	22.2%	22.2%	44.4%	0.0%	11.1%	100.0%
			% within SSDM	10.5%	15.4%	6.6%	0.0%	14.3%	8.3%
			Adjusted Residual	.4	1.0	-.7	-.9	.6	
		5 Feudal	Count	2	0	4	1	0	7
			Expected Count	1.2	.8	3.9	.6	.4	7.0
			% within APPL	28.6%	0.0%	57.1%	14.3%	0.0%	100.0%
			% within SSDM	10.5%	0.0%	6.6%	11.1%	0.0%	6.4%
			Adjusted Residual	.8	-1.0	.1	.6	-.7	
		Total	Count	19	13	61	9	7	109
			Expected Count	19.0	13.0	61.0	9.0	7.0	109.0
			% within APPL	17.4%	11.9%	56.0%	8.3%	6.4%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	12	7	14	5	3	41
			Expected Count	10.3	5.1	16.7	5.6	3.4	41.0
			% within APPL	29.3%	17.1%	34.1%	12.2%	7.3%	100.0%
			% within SSDM	50.0%	58.3%	35.9%	38.5%	37.5%	42.7%
			Adjusted Residual	.8	1.2	-1.1	-.3	-.3	
		2 IT monarchy	Count	0	1	2	0	0	3
			Expected Count	.8	.4	1.2	.4	.3	3.0
			% within APPL	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	8.3%	5.1%	0.0%	0.0%	3.1%
			Adjusted Residual	-1.0	1.1	.9	-.7	-.5	
		3 Federal	Count	8	1	16	6	3	34
			Expected Count	8.5	4.3	13.8	4.6	2.8	34.0
			% within APPL	23.5%	2.9%	47.1%	17.6%	8.8%	100.0%
			% within SSDM	33.3%	8.3%	41.0%	46.2%	37.5%	35.4%
			Adjusted Residual	-.2	-2.1	1.0	.9	.1	
		4 IT Duopoly	Count	0	1	5	1	0	7
			Expected Count	1.8	.9	2.8	.9	.6	7.0
			% within APPL	0.0%	14.3%	71.4%	14.3%	0.0%	100.0%
			% within SSDM	0.0%	8.3%	12.8%	7.7%	0.0%	7.3%
			Adjusted Residual	-1.6	.1	1.7	.1	-.8	
		5 Feudal	Count	4	2	2	1	2	11
			Expected Count	2.8	1.4	4.5	1.5	.9	11.0
			% within APPL	36.4%	18.2%	18.2%	9.1%	18.2%	100.0%
			% within SSDM	16.7%	16.7%	5.1%	7.7%	25.0%	11.5%
			Adjusted Residual	.9	.6	-1.6	-.5	1.3	
		Total	Count	24	12	39	13	8	96
			Expected Count	24.0	12.0	39.0	13.0	8.0	96.0
			% within APPL	25.0%	12.5%	40.6%	13.5%	8.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	21	10	20	6	8	65
			Expected Count	13.6	7.9	31.7	7.0	4.8	65.0
			% within APPL	32.3%	15.4%	30.8%	9.2%	12.3%	100.0%
			% within SSDM	48.8%	40.0%	20.0%	27.3%	53.3%	31.7%
			Adjusted Residual	2.7	1.0	-3.5	-.5	1.9	
		2 IT monarchy	Count	1	1	5	0	1	8
			Expected Count	1.7	1.0	3.9	.9	.6	8.0
			% within APPL	12.5%	12.5%	62.5%	0.0%	12.5%	100.0%
			% within SSDM	2.3%	4.0%	5.0%	0.0%	6.7%	3.9%
			Adjusted Residual	-.6	.0	.8	-1.0	.6	
		3 Federal	Count	13	9	60	13	3	98
			Expected Count	20.6	12.0	47.8	10.5	7.2	98.0
			% within APPL	13.3%	9.2%	61.2%	13.3%	3.1%	100.0%
			% within SSDM	30.2%	36.0%	60.0%	59.1%	20.0%	47.8%
			Adjusted Residual	-2.6	-1.3	3.4	1.1	-2.2	
		4 IT Duopoly	Count	2	3	9	1	1	16
			Expected Count	3.4	2.0	7.8	1.7	1.2	16.0
			% within APPL	12.5%	18.8%	56.3%	6.3%	6.3%	100.0%
			% within SSDM	4.7%	12.0%	9.0%	4.5%	6.7%	7.8%
			Adjusted Residual	-.9	.8	.6	-.6	-.2	
		5 Feudal	Count	6	2	6	2	2	18
			Expected Count	3.8	2.2	8.8	1.9	1.3	18.0
			% within APPL	33.3%	11.1%	33.3%	11.1%	11.1%	100.0%
			% within SSDM	14.0%	8.0%	6.0%	9.1%	13.3%	8.8%
			Adjusted Residual	1.3	-.1	-1.4	.1	.6	
		Total	Count	43	25	100	22	15	205
			Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
			% within APPL	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX D4: CROSS-TABULATION OF IT ARCHITECTURE

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Large	Provider	1 Business monarchy	Count	2	2	4	1	2	11
			Expected Count	1.3	1.5	6.8	.9	.5	11.0
			% within ARCH	18.2%	18.2%	36.4%	9.1%	18.2%	100.0%
			% within SSDM	20.0%	18.2%	7.8%	14.3%	50.0%	13.3%
			Adjusted Residual	.7	.5	-1.8	.1	2.2	
		2 IT monarchy	Count	1	1	4	0	0	6
			Expected Count	.7	.8	3.7	.5	.3	6.0
			% within ARCH	16.7%	16.7%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	9.1%	7.8%	0.0%	0.0%	7.2%
			Adjusted Residual	.4	.3	.3	-.8	-.6	
		3 Federal	Count	2	7	34	6	2	51
			Expected Count	6.1	6.8	31.3	4.3	2.5	51.0
			% within ARCH	3.9%	13.7%	66.7%	11.8%	3.9%	100.0%
			% within SSDM	20.0%	63.6%	66.7%	85.7%	50.0%	61.4%
			Adjusted Residual	-2.9	.2	1.2	1.4	-.5	
		4 IT Duopoly	Count	4	1	8	0	0	13
			Expected Count	1.6	1.7	8.0	1.1	.6	13.0
			% within ARCH	30.8%	7.7%	61.5%	0.0%	0.0%	100.0%
			% within SSDM	40.0%	9.1%	15.7%	0.0%	0.0%	15.7%
			Adjusted Residual	2.3	-.6	.0	-1.2	-.9	
		5 Feudal	Count	1	0	1	0	0	2
			Expected Count	.2	.3	1.2	.2	.1	2.0
			% within ARCH	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	0.0%	2.0%	0.0%	0.0%	2.4%
			Adjusted Residual	1.7	-.6	-.3	-.4	-.3	
		Total	Count	10	11	51	7	4	83
			Expected Count	10.0	11.0	51.0	7.0	4.0	83.0
			% within ARCH	12.0%	13.3%	61.4%	8.4%	4.8%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	3	0	3	1	0	7
			Expected Count	1.4	.3	3.9	1.1	.3	7.0
			% within ARCH	42.9%	0.0%	42.9%	14.3%	0.0%	100.0%
			% within SSDM	60.0%	0.0%	21.4%	25.0%	0.0%	28.0%
			Adjusted Residual	1.8	-.6	-.8	-.1	-.6	
		2 IT monarchy	Count	0	0	1	0	0	1
			Expected Count	.2	.0	.6	.2	.0	1.0
			% within ARCH	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	7.1%	0.0%	0.0%	4.0%
			Adjusted Residual	-.5	-.2	.9	-.4	-.2	
		3 Federal	Count	1	1	8	2	0	12
			Expected Count	2.4	.5	6.7	1.9	.5	12.0
			% within ARCH	8.3%	8.3%	66.7%	16.7%	0.0%	100.0%
			% within SSDM	20.0%	100.0%	57.1%	50.0%	0.0%	48.0%
			Adjusted Residual	-1.4	1.1	1.0	.1	-1.0	
		4 IT Duopoly	Count	1	0	1	1	1	4
			Expected Count	.8	.2	2.2	.6	.2	4.0
			% within ARCH	25.0%	0.0%	25.0%	25.0%	25.0%	100.0%
			% within SSDM	20.0%	0.0%	7.1%	25.0%	100.0%	16.0%
			Adjusted Residual	.3	-.4	-1.4	.5	2.3	
		5 Feudal	Count	0	0	1	0	0	1
			Expected Count	.2	.0	.6	.2	.0	1.0
			% within ARCH	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	7.1%	0.0%	0.0%	4.0%
			Adjusted Residual	-.5	-.2	.9	-.4	-.2	
		Total	Count	5	1	14	4	1	25
			Expected Count	5.0	1.0	14.0	4.0	1.0	25.0
			% within ARCH	20.0%	4.0%	56.0%	16.0%	4.0%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	5	2	7	2	2	18
			Expected Count	2.5	2.0	10.8	1.8	.8	18.0
			% within ARCH	27.8%	11.1%	38.9%	11.1%	11.1%	100.0%
			% within SSDM	33.3%	16.7%	10.8%	18.2%	40.0%	16.7%
			Adjusted Residual	1.9	0.0	-2.0	.1	1.4	
		2 IT monarchy	Count	1	1	5	0	0	7
			Expected Count	1.0	.8	4.2	.7	.3	7.0
			% within ARCH	14.3%	14.3%	71.4%	0.0%	0.0%	100.0%
			% within SSDM	6.7%	8.3%	7.7%	0.0%	0.0%	6.5%
			Adjusted Residual	.0	.3	.6	-.9	-.6	
		3 Federal	Count	3	8	42	8	2	63
			Expected Count	8.8	7.0	37.9	6.4	2.9	63.0
			% within ARCH	4.8%	12.7%	66.7%	12.7%	3.2%	100.0%
			% within SSDM	20.0%	66.7%	64.6%	72.7%	40.0%	58.3%
			Adjusted Residual	-3.2	.6	1.6	1.0	-.9	
		4 IT Duopoly	Count	5	1	9	1	1	17
			Expected Count	2.4	1.9	10.2	1.7	.8	17.0
			% within ARCH	29.4%	5.9%	52.9%	5.9%	5.9%	100.0%
			% within SSDM	33.3%	8.3%	13.8%	9.1%	20.0%	15.7%
			Adjusted Residual	2.0	-.7	-.7	-.6	.3	
		5 Feudal	Count	1	0	2	0	0	3
			Expected Count	.4	.3	1.8	.3	.1	3.0
			% within ARCH	33.3%	0.0%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	6.7%	0.0%	3.1%	0.0%	0.0%	2.8%
			Adjusted Residual	1.0	-.6	.2	-.6	-.4	

Size	Relationship		Shared Services Delivery Arrangement (SSDA)					
			Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
	Total	Count	15	12	65	11	5	108
		Expected Count	15.0	12.0	65.0	11.0	5.0	108.0
		% within ARCH	13.9%	11.1%	60.2%	10.2%	4.6%	100.0%
		% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Small	Provider	1 Business monarchy	Count	8	1	2	1	2	14
			Expected Count	4.8	1.1	5.4	1.1	1.6	14.0
			% within ARCH	57.1%	7.1%	14.3%	7.1%	14.3%	100.0%
			% within SSDM	88.9%	50.0%	20.0%	50.0%	66.7%	53.8%
			Adjusted Residual	2.6	-.1	-2.7	-.1	.5	
		2 IT monarchy	Count	1	0	3	0	0	4
			Expected Count	1.4	.3	1.5	.3	.5	4.0
			% within ARCH	25.0%	0.0%	75.0%	0.0%	0.0%	100.0%
			% within SSDM	11.1%	0.0%	30.0%	0.0%	0.0%	15.4%
			Adjusted Residual	-.4	-.6	1.6	-.6	-.8	
		3 Federal	Count	0	1	3	1	0	5
			Expected Count	1.7	.4	1.9	.4	.6	5.0
			% within ARCH	0.0%	20.0%	60.0%	20.0%	0.0%	100.0%
			% within SSDM	0.0%	50.0%	30.0%	50.0%	0.0%	19.2%
			Adjusted Residual	-1.8	1.1	1.1	1.1	-.9	
		4 IT Duopoly	Count	0	0	1	0	1	2
			Expected Count	.7	.2	.8	.2	.2	2.0
			% within ARCH	0.0%	0.0%	50.0%	0.0%	50.0%	100.0%
			% within SSDM	0.0%	0.0%	10.0%	0.0%	33.3%	7.7%
			Adjusted Residual	-1.1	-.4	.3	-.4	1.8	
		5 Feudal	Count	0	0	1	0	0	1
			Expected Count	.3	.1	.4	.1	.1	1.0
			% within ARCH	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	10.0%	0.0%	0.0%	3.8%
			Adjusted Residual	-.7	-.3	1.3	-.3	-.4	
		Total	Count	9	2	10	2	3	26
			Expected Count	9.0	2.0	10.0	2.0	3.0	26.0
			% within ARCH	34.6%	7.7%	38.5%	7.7%	11.5%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	10	7	15	7	3	42
			Expected Count	11.2	6.5	14.8	5.3	4.1	42.0
			% within ARCH	23.8%	16.7%	35.7%	16.7%	7.1%	100.0%
			% within SSDM	52.6%	63.6%	60.0%	77.8%	42.9%	59.2%
			Adjusted Residual	-.7	.3	.1	1.2	-.9	
		2 IT monarchy	Count	0	2	1	0	0	3
			Expected Count	.8	.5	1.1	.4	.3	3.0
			% within ARCH	0.0%	66.7%	33.3%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	18.2%	4.0%	0.0%	0.0%	4.2%
			Adjusted Residual	-1.1	2.5	-.1	-.7	-.6	
		3 Federal	Count	6	1	5	2	2	16
			Expected Count	4.3	2.5	5.6	2.0	1.6	16.0
			% within ARCH	37.5%	6.3%	31.3%	12.5%	12.5%	100.0%
			% within SSDM	31.6%	9.1%	20.0%	22.2%	28.6%	22.5%
			Adjusted Residual	1.1	-1.2	-.4	.0	.4	
		4 IT Duopoly	Count	1	1	3	0	0	5
			Expected Count	1.3	.8	1.8	.6	.5	5.0
			% within ARCH	20.0%	20.0%	60.0%	0.0%	0.0%	100.0%
			% within SSDM	5.3%	9.1%	12.0%	0.0%	0.0%	7.0%
			Adjusted Residual	-.4	.3	1.2	-.9	-.8	
		5 Feudal	Count	2	0	1	0	2	5
			Expected Count	1.3	.8	1.8	.6	.5	5.0
			% within ARCH	40.0%	0.0%	20.0%	0.0%	40.0%	100.0%
			% within SSDM	10.5%	0.0%	4.0%	0.0%	28.6%	7.0%
			Adjusted Residual	.7	-1.0	-.7	-.9	2.3	
		Total	Count	19	11	25	9	7	71
			Expected Count	19.0	11.0	25.0	9.0	7.0	71.0
			% within ARCH	26.8%	15.5%	35.2%	12.7%	9.9%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	18	8	17	8	5	56
			Expected Count	16.2	7.5	20.2	6.4	5.8	56.0
			% within ARCH	32.1%	14.3%	30.4%	14.3%	8.9%	100.0%
			% within SSDM	64.3%	61.5%	48.6%	72.7%	50.0%	57.7%
			Adjusted Residual	.8	.3	-1.4	1.1	-.5	
		2 IT monarchy	Count	1	2	4	0	0	7
			Expected Count	2.0	.9	2.5	.8	.7	7.0
			% within ARCH	14.3%	28.6%	57.1%	0.0%	0.0%	100.0%
			% within SSDM	3.6%	15.4%	11.4%	0.0%	0.0%	7.2%
			Adjusted Residual	-.9	1.2	1.2	-1.0	-.9	
		3 Federal	Count	6	2	8	3	2	21
			Expected Count	6.1	2.8	7.6	2.4	2.2	21.0
			% within ARCH	28.6%	9.5%	38.1%	14.3%	9.5%	100.0%
			% within SSDM	21.4%	15.4%	22.9%	27.3%	20.0%	21.6%
			Adjusted Residual	.0	-.6	.2	.5	-.1	
		4 IT Duopoly	Count	1	1	4	0	1	7
			Expected Count	2.0	.9	2.5	.8	.7	7.0
			% within ARCH	14.3%	14.3%	57.1%	0.0%	14.3%	100.0%
			% within SSDM	3.6%	7.7%	11.4%	0.0%	10.0%	7.2%
			Adjusted Residual	-.9	.1	1.2	-1.0	.4	
		5 Feudal	Count	2	0	2	0	2	6
			Expected Count	1.7	.8	2.2	.7	.6	6.0
			% within ARCH	33.3%	0.0%	33.3%	0.0%	33.3%	100.0%
			% within SSDM	7.1%	0.0%	5.7%	0.0%	20.0%	6.2%
			Adjusted Residual	.2	-1.0	-.1	-.9	1.9	
		Total	Count	28	13	35	11	10	97
			Expected Count	28.0	13.0	35.0	11.0	10.0	97.0
			% within ARCH	28.9%	13.4%	36.1%	11.3%	10.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
All	Provider	1 Business monarchy	Count	10	3	6	2	4	25
			Expected Count	4.4	3.0	14.0	2.1	1.6	25.0
			% within ARCH	40.0%	12.0%	24.0%	8.0%	16.0%	100.0%
			% within SSDM	52.6%	23.1%	9.8%	22.2%	57.1%	22.9%
			Adjusted Residual	3.4	.0	-3.7	-.1	2.2	
		2 IT monarchy	Count	2	1	7	0	0	10
			Expected Count	1.7	1.2	5.6	.8	.6	10.0
			% within ARCH	20.0%	10.0%	70.0%	0.0%	0.0%	100.0%
			% within SSDM	10.5%	7.7%	11.5%	0.0%	0.0%	9.2%
			Adjusted Residual	.2	-.2	.9	-1.0	-.9	
		3 Federal	Count	2	8	37	7	2	56
			Expected Count	9.8	6.7	31.3	4.6	3.6	56.0
			% within ARCH	3.6%	14.3%	66.1%	12.5%	3.6%	100.0%
			% within SSDM	10.5%	61.5%	60.7%	77.8%	28.6%	51.4%
			Adjusted Residual	-3.9	.8	2.2	1.7	-1.2	
		4 IT Duopoly	Count	4	1	9	0	1	15
			Expected Count	2.6	1.8	8.4	1.2	1.0	15.0
			% within ARCH	26.7%	6.7%	60.0%	0.0%	6.7%	100.0%
			% within SSDM	21.1%	7.7%	14.8%	0.0%	14.3%	13.8%
			Adjusted Residual	1.0	-.7	.3	-1.3	.0	
		5 Feudal	Count	1	0	2	0	0	3
			Expected Count	.5	.4	1.7	.2	.2	3.0
			% within ARCH	33.3%	0.0%	66.7%	0.0%	0.0%	100.0%
			% within SSDM	5.3%	0.0%	3.3%	0.0%	0.0%	2.8%
			Adjusted Residual	.7	-.6	.4	-.5	-.5	
		Total	Count	19	13	61	9	7	109
			Expected Count	19.0	13.0	61.0	9.0	7.0	109.0
			% within ARCH	17.4%	11.9%	56.0%	8.3%	6.4%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	13	7	18	8	3	49
			Expected Count	12.3	6.1	19.9	6.6	4.1	49.0
			% within ARCH	26.5%	14.3%	36.7%	16.3%	6.1%	100.0%
			% within SSDM	54.2%	58.3%	46.2%	61.5%	37.5%	51.0%
			Adjusted Residual	.4	.5	-.8	.8	-.8	
		2 IT monarchy	Count	0	2	2	0	0	4
			Expected Count	1.0	.5	1.6	.5	.3	4.0
			% within ARCH	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	16.7%	5.1%	0.0%	0.0%	4.2%
			Adjusted Residual	-1.2	2.3	.4	-.8	-.6	
		3 Federal	Count	7	2	13	4	2	28
			Expected Count	7.0	3.5	11.4	3.8	2.3	28.0
			% within ARCH	25.0%	7.1%	46.4%	14.3%	7.1%	100.0%
			% within SSDM	29.2%	16.7%	33.3%	30.8%	25.0%	29.2%
			Adjusted Residual	0.0	-1.0	.7	.1	-.3	
		4 IT Duopoly	Count	2	1	4	1	1	9
			Expected Count	2.3	1.1	3.7	1.2	.8	9.0
			% within ARCH	22.2%	11.1%	44.4%	11.1%	11.1%	100.0%
			% within SSDM	8.3%	8.3%	10.3%	7.7%	12.5%	9.4%
			Adjusted Residual	-.2	-.1	.2	-.2	.3	
		5 Feudal	Count	2	0	2	0	2	6
			Expected Count	1.5	.8	2.4	.8	.5	6.0
			% within ARCH	33.3%	0.0%	33.3%	0.0%	33.3%	100.0%
			% within SSDM	8.3%	0.0%	5.1%	0.0%	25.0%	6.3%
			Adjusted Residual	.5	-1.0	-.4	-1.0	2.3	
		Total	Count	24	12	39	13	8	96
			Expected Count	24.0	12.0	39.0	13.0	8.0	96.0
			% within ARCH	25.0%	12.5%	40.6%	13.5%	8.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	23	10	24	10	7	74
			Expected Count	15.5	9.0	36.1	7.9	5.4	74.0
			% within ARCH	31.1%	13.5%	32.4%	13.5%	9.5%	100.0%
			% within SSDM	53.5%	40.0%	24.0%	45.5%	46.7%	36.1%
			Adjusted Residual	2.7	.4	-3.5	1.0	.9	
		2 IT monarchy	Count	2	3	9	0	0	14
			Expected Count	2.9	1.7	6.8	1.5	1.0	14.0
			% within ARCH	14.3%	21.4%	64.3%	0.0%	0.0%	100.0%
			% within SSDM	4.7%	12.0%	9.0%	0.0%	0.0%	6.8%
			Adjusted Residual	-.6	1.1	1.2	-1.3	-1.1	
		3 Federal	Count	9	10	50	11	4	84
			Expected Count	17.6	10.2	41.0	9.0	6.1	84.0
			% within ARCH	10.7%	11.9%	59.5%	13.1%	4.8%	100.0%
			% within SSDM	20.9%	40.0%	50.0%	50.0%	26.7%	41.0%
			Adjusted Residual	-3.0	-.1	2.6	.9	-1.2	
		4 IT Duopoly	Count	6	2	13	1	2	24
			Expected Count	5.0	2.9	11.7	2.6	1.8	24.0
			% within ARCH	25.0%	8.3%	54.2%	4.2%	8.3%	100.0%
			% within SSDM	14.0%	8.0%	13.0%	4.5%	13.3%	11.7%
			Adjusted Residual	.5	-.6	.6	-1.1	.2	
		5 Feudal	Count	3	0	4	0	2	9
			Expected Count	1.9	1.1	4.4	1.0	.7	9.0
			% within ARCH	33.3%	0.0%	44.4%	0.0%	22.2%	100.0%
			% within SSDM	7.0%	0.0%	4.0%	0.0%	13.3%	4.4%
			Adjusted Residual	.9	-1.1	-.3	-1.1	1.8	
		Total	Count	43	25	100	22	15	205
			Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
			% within ARCH	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX D5: CROSS-TABULATION OF IT INFRASTRUCTURE

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
Large	Provider	1 Business monarchy	Count	2	3	4	1	3	13
			Expected Count	1.6	1.7	8.0	1.1	.6	13.0
			% within INFR	15.4%	23.1%	30.8%	7.7%	23.1%	100.0%
			% within SSDM	20.0%	27.3%	7.8%	14.3%	75.0%	15.7%
			Adjusted Residual	.4	1.1	-2.5	-.1	3.3	
		2 IT monarchy	Count	1	1	2	0	0	4
			Expected Count	.5	.5	2.5	.3	.2	4.0
			% within INFR	25.0%	25.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	9.1%	3.9%	0.0%	0.0%	4.8%
			Adjusted Residual	.8	.7	-.5	-.6	-.5	
		3 Federal	Count	3	7	36	5	1	52
			Expected Count	6.3	6.9	32.0	4.4	2.5	52.0
			% within INFR	5.8%	13.5%	69.2%	9.6%	1.9%	100.0%
			% within SSDM	30.0%	63.6%	70.6%	71.4%	25.0%	62.7%
			Adjusted Residual	-2.3	.1	1.9	.5	-1.6	
		4 IT Duopoly	Count	3	0	9	1	0	13
			Expected Count	1.6	1.7	8.0	1.1	.6	13.0
			% within INFR	23.1%	0.0%	69.2%	7.7%	0.0%	100.0%
			% within SSDM	30.0%	0.0%	17.6%	14.3%	0.0%	15.7%
			Adjusted Residual	1.3	-1.5	.6	-.1	-.9	
		5 Feudal	Count	1	0	0	0	0	1
			Expected Count	.1	.1	.6	.1	.0	1.0
			% within INFR	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
			% within SSDM	10.0%	0.0%	0.0%	0.0%	0.0%	1.2%
			Adjusted Residual	2.7	-.4	-1.3	-.3	-.2	
		Total	Count	10	11	51	7	4	83
			Expected Count	10.0	11.0	51.0	7.0	4.0	83.0
			% within INFR	12.0%	13.3%	61.4%	8.4%	4.8%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	2	0	4	1	0	7
			Expected Count	1.4	.3	3.9	1.1	.3	7.0
			% within INFR	28.6%	0.0%	57.1%	14.3%	0.0%	100.0%
			% within SSDM	40.0%	0.0%	28.6%	25.0%	0.0%	28.0%
			Adjusted Residual	.7	-.6	.1	-.1	-.6	
		3 Federal	Count	2	0	8	1	1	12
			Expected Count	2.4	.5	6.7	1.9	.5	12.0
			% within INFR	16.7%	0.0%	66.7%	8.3%	8.3%	100.0%
			% within SSDM	40.0%	0.0%	57.1%	25.0%	100.0%	48.0%
			Adjusted Residual	-.4	-1.0	1.0	-1.0	1.1	
		4 IT Duopoly	Count	1	0	1	1	0	3
			Expected Count	.6	.1	1.7	.5	.1	3.0
			% within INFR	33.3%	0.0%	33.3%	33.3%	0.0%	100.0%
			% within SSDM	20.0%	0.0%	7.1%	25.0%	0.0%	12.0%
			Adjusted Residual	.6	-.4	-.8	.9	-.4	
		5 Feudal	Count	0	1	1	1	0	3
			Expected Count	.6	.1	1.7	.5	.1	3.0
			% within INFR	0.0%	33.3%	33.3%	33.3%	0.0%	100.0%
			% within SSDM	0.0%	100.0%	7.1%	25.0%	0.0%	12.0%
			Adjusted Residual	-.9	2.8	-.8	.9	-.4	
		Total	Count	5	1	14	4	1	25
			Expected Count	5.0	1.0	14.0	4.0	1.0	25.0
			% within INFR	20.0%	4.0%	56.0%	16.0%	4.0%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	4	3	8	2	3	20
			Expected Count	2.8	2.2	12.0	2.0	.9	20.0
			% within INFR	20.0%	15.0%	40.0%	10.0%	15.0%	100.0%
			% within SSDM	26.7%	25.0%	12.3%	18.2%	60.0%	18.5%
			Adjusted Residual	.9	.6	-2.0	.0	2.4	
		2 IT monarchy	Count	1	1	2	0	0	4
			Expected Count	.6	.4	2.4	.4	.2	4.0
			% within INFR	25.0%	25.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	6.7%	8.3%	3.1%	0.0%	0.0%	3.7%
			Adjusted Residual	.7	.9	-.4	-.7	-.4	
		3 Federal	Count	5	7	44	6	2	64
			Expected Count	8.9	7.1	38.5	6.5	3.0	64.0
			% within INFR	7.8%	10.9%	68.8%	9.4%	3.1%	100.0%
			% within SSDM	33.3%	58.3%	67.7%	54.5%	40.0%	59.3%
			Adjusted Residual	-2.2	-.1	2.2	-.3	-.9	
		4 IT Duopoly	Count	4	0	10	2	0	16
			Expected Count	2.2	1.8	9.6	1.6	.7	16.0
			% within INFR	25.0%	0.0%	62.5%	12.5%	0.0%	100.0%
			% within SSDM	26.7%	0.0%	15.4%	18.2%	0.0%	14.8%
			Adjusted Residual	1.4	-1.5	.2	.3	-1.0	
		5 Feudal	Count	1	1	1	1	0	4
			Expected Count	.6	.4	2.4	.4	.2	4.0
			% within INFR	25.0%	25.0%	25.0%	25.0%	0.0%	100.0%
			% within SSDM	6.7%	8.3%	1.5%	9.1%	0.0%	3.7%
			Adjusted Residual	.7	.9	-1.5	1.0	-.4	
		Total	Count	15	12	65	11	5	108
			Expected Count	15.0	12.0	65.0	11.0	5.0	108.0
			% within INFR	13.9%	11.1%	60.2%	10.2%	4.6%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service Corporate		Supra-Corporate	Iso-Corporate	Total
Small	Provider	1 Business monarchy	Count	8	1	1	1	1	12
			Expected Count	4.2	.9	4.6	.9	1.4	12.0
			% within INFR	66.7%	8.3%	8.3%	8.3%	8.3%	100.0%
			% within SSDM	88.9%	50.0%	10.0%	50.0%	33.3%	46.2%
			Adjusted Residual	3.2	.1	-2.9	.1	-.5	
		2 IT monarchy	Count	1	0	2	0	1	4
			Expected Count	1.4	.3	1.5	.3	.5	4.0
			% within INFR	25.0%	0.0%	50.0%	0.0%	25.0%	100.0%
			% within SSDM	11.1%	0.0%	20.0%	0.0%	33.3%	15.4%
			Adjusted Residual	-.4	-.6	.5	-.6	.9	
		3 Federal	Count	0	1	5	0	1	7
			Expected Count	2.4	.5	2.7	.5	.8	7.0
			% within INFR	0.0%	14.3%	71.4%	0.0%	14.3%	100.0%
			% within SSDM	0.0%	50.0%	50.0%	0.0%	33.3%	26.9%
			Adjusted Residual	-2.3	.8	2.1	-.9	.3	
		4 IT Duopoly	Count	0	0	2	1	0	3
			Expected Count	1.0	.2	1.2	.2	.3	3.0
			% within INFR	0.0%	0.0%	66.7%	33.3%	0.0%	100.0%
			% within SSDM	0.0%	0.0%	20.0%	50.0%	0.0%	11.5%
			Adjusted Residual	-1.3	-.5	1.1	1.8	-.7	
		Total	Count	9	2	10	2	3	26
			Expected Count	9.0	2.0	10.0	2.0	3.0	26.0
			% within INFR	34.6%	7.7%	38.5%	7.7%	11.5%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	9	7	14	7	3	40
			Expected Count	10.7	6.2	14.1	5.1	3.9	40.0
			% within INFR	22.5%	17.5%	35.0%	17.5%	7.5%	100.0%
			% within SSDM	47.4%	63.6%	56.0%	77.8%	42.9%	56.3%
			Adjusted Residual	-.9	.5	.0	1.4	-.8	
		2 IT monarchy	Count	0	1	1	0	0	2
			Expected Count	.5	.3	.7	.3	.2	2.0
			% within INFR	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	9.1%	4.0%	0.0%	0.0%	2.8%
			Adjusted Residual	-.9	1.4	.4	-.5	-.5	
		3 Federal	Count	5	1	5	2	2	15
			Expected Count	4.0	2.3	5.3	1.9	1.5	15.0
			% within INFR	33.3%	6.7%	33.3%	13.3%	13.3%	100.0%
			% within SSDM	26.3%	9.1%	20.0%	22.2%	28.6%	21.1%
			Adjusted Residual	.6	-1.1	-.2	.1	.5	
		4 IT Duopoly	Count	3	1	5	0	0	9
			Expected Count	2.4	1.4	3.2	1.1	.9	9.0
			% within INFR	33.3%	11.1%	55.6%	0.0%	0.0%	100.0%
			% within SSDM	15.8%	9.1%	20.0%	0.0%	0.0%	12.7%
			Adjusted Residual	.5	-.4	1.4	-1.2	-1.1	
		5 Feudal	Count	2	1	0	0	2	5
			Expected Count	1.3	.8	1.8	.6	.5	5.0
			% within INFR	40.0%	20.0%	0.0%	0.0%	40.0%	100.0%
			% within SSDM	10.5%	9.1%	0.0%	0.0%	28.6%	7.0%
			Adjusted Residual	.7	.3	-1.7	-.9	2.3	
		Total	Count	19	11	25	9	7	71
			Expected Count	19.0	11.0	25.0	9.0	7.0	71.0
			% within INFR	26.8%	15.5%	35.2%	12.7%	9.9%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	17	8	15	8	4	52
			Expected Count	15.0	7.0	18.8	5.9	5.4	52.0
			% within INFR	32.7%	15.4%	28.8%	15.4%	7.7%	100.0%
			% within SSDM	60.7%	61.5%	42.9%	72.7%	40.0%	53.6%
			Adjusted Residual	.9	.6	-1.6	1.4	-.9	
		2 IT monarchy	Count	1	1	3	0	1	6
			Expected Count	1.7	.8	2.2	.7	.6	6.0
			% within INFR	16.7%	16.7%	50.0%	0.0%	16.7%	100.0%
			% within SSDM	3.6%	7.7%	8.6%	0.0%	10.0%	6.2%
			Adjusted Residual	-.7	.2	.7	-.9	.5	
		3 Federal	Count	5	2	10	2	3	22
			Expected Count	6.4	2.9	7.9	2.5	2.3	22.0
			% within INFR	22.7%	9.1%	45.5%	9.1%	13.6%	100.0%
			% within SSDM	17.9%	15.4%	28.6%	18.2%	30.0%	22.7%
			Adjusted Residual	-.7	-.7	1.0	-.4	.6	
		4 IT Duopoly	Count	3	1	7	1	0	12
			Expected Count	3.5	1.6	4.3	1.4	1.2	12.0
			% within INFR	25.0%	8.3%	58.3%	8.3%	0.0%	100.0%
			% within SSDM	10.7%	7.7%	20.0%	9.1%	0.0%	12.4%
			Adjusted Residual	-.3	-.6	1.7	-.4	-1.3	
		5 Feudal	Count	2	1	0	0	2	5
			Expected Count	1.4	.7	1.8	.6	.5	5.0
			% within INFR	40.0%	20.0%	0.0%	0.0%	40.0%	100.0%
			% within SSDM	7.1%	7.7%	0.0%	0.0%	20.0%	5.2%
			Adjusted Residual	.6	.4	-1.7	-.8	2.2	
		Total	Count	28	13	35	11	10	97
			Expected Count	28.0	13.0	35.0	11.0	10.0	97.0
			% within INFR	28.9%	13.4%	36.1%	11.3%	10.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Size	Relationship			Shared Services Delivery Arrangement (SSDA)					
				Intra-service	Service	Corporate	Supra-Corporate	Iso-Corporate	Total
All	Provider	1 Business monarchy	Count	10	4	5	2	4	25
			Expected Count	4.4	3.0	14.0	2.1	1.6	25.0
			% within INFR	40.0%	16.0%	20.0%	8.0%	16.0%	100.0%
			% within SSDM	52.6%	30.8%	8.2%	22.2%	57.1%	22.9%
			Adjusted Residual	3.4	.7	-4.1	-.1	2.2	
		2 IT monarchy	Count	2	1	4	0	1	8
			Expected Count	1.4	1.0	4.5	.7	.5	8.0
			% within INFR	25.0%	12.5%	50.0%	0.0%	12.5%	100.0%
			% within SSDM	10.5%	7.7%	6.6%	0.0%	14.3%	7.3%
			Adjusted Residual	.6	.1	-.4	-.9	.7	
		3 Federal	Count	3	8	41	5	2	59
			Expected Count	10.3	7.0	33.0	4.9	3.8	59.0
			% within INFR	5.1%	13.6%	69.5%	8.5%	3.4%	100.0%
			% within SSDM	15.8%	61.5%	67.2%	55.6%	28.6%	54.1%
			Adjusted Residual	-3.7	.6	3.1	.1	-1.4	
		4 IT Duopoly	Count	3	0	11	2	0	16
			Expected Count	2.8	1.9	9.0	1.3	1.0	16.0
			% within INFR	18.8%	0.0%	68.8%	12.5%	0.0%	100.0%
			% within SSDM	15.8%	0.0%	18.0%	22.2%	0.0%	14.7%
			Adjusted Residual	.2	-1.6	1.1	.7	-1.1	
		5 Feudal	Count	1	0	0	0	0	1
			Expected Count	.2	.1	.6	.1	.1	1.0
			% within INFR	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
			% within SSDM	5.3%	0.0%	0.0%	0.0%	0.0%	.9%
			Adjusted Residual	2.2	-.4	-1.1	-.3	-.3	
		Total	Count	19	13	61	9	7	109
			Expected Count	19.0	13.0	61.0	9.0	7.0	109.0
			% within INFR	17.4%	11.9%	56.0%	8.3%	6.4%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Client	1 Business monarchy	Count	11	7	18	8	3	47
			Expected Count	11.8	5.9	19.1	6.4	3.9	47.0
			% within INFR	23.4%	14.9%	38.3%	17.0%	6.4%	100.0%
			% within SSDM	45.8%	58.3%	46.2%	61.5%	37.5%	49.0%
			Adjusted Residual	-.4	.7	-.5	1.0	-.7	
		2 IT monarchy	Count	0	1	1	0	0	2
			Expected Count	.5	.3	.8	.3	.2	2.0
			% within INFR	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%
			% within SSDM	0.0%	8.3%	2.6%	0.0%	0.0%	2.1%
			Adjusted Residual	-.8	1.6	.3	-.6	-.4	
		3 Federal	Count	7	1	13	3	3	27
			Expected Count	6.8	3.4	11.0	3.7	2.3	27.0
			% within INFR	25.9%	3.7%	48.1%	11.1%	11.1%	100.0%
			% within SSDM	29.2%	8.3%	33.3%	23.1%	37.5%	28.1%
			Adjusted Residual	.1	-1.6	.9	-.4	.6	
		4 IT Duopoly	Count	4	1	6	1	0	12
			Expected Count	3.0	1.5	4.9	1.6	1.0	12.0
			% within INFR	33.3%	8.3%	50.0%	8.3%	0.0%	100.0%
			% within SSDM	16.7%	8.3%	15.4%	7.7%	0.0%	12.5%
			Adjusted Residual	.7	-.5	.7	-.6	-1.1	
		5 Feudal	Count	2	2	1	1	2	8
			Expected Count	2.0	1.0	3.3	1.1	.7	8.0
			% within INFR	25.0%	25.0%	12.5%	12.5%	25.0%	100.0%
			% within SSDM	8.3%	16.7%	2.6%	7.7%	25.0%	8.3%
			Adjusted Residual	0.0	1.1	-1.7	-.1	1.8	
		Total	Count	24	12	39	13	8	96
			Expected Count	24.0	12.0	39.0	13.0	8.0	96.0
			% within INFR	25.0%	12.5%	40.6%	13.5%	8.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Total	1 Business monarchy	Count	21	11	23	10	7	72
			Expected Count	15.1	8.8	35.1	7.7	5.3	72.0
			% within INFR	29.2%	15.3%	31.9%	13.9%	9.7%	100.0%
			% within SSDM	48.8%	44.0%	23.0%	45.5%	46.7%	35.1%
			Adjusted Residual	2.1	1.0	-3.5	1.1	1.0	
		2 IT monarchy	Count	2	2	5	0	1	10
			Expected Count	2.1	1.2	4.9	1.1	.7	10.0
			% within INFR	20.0%	20.0%	50.0%	0.0%	10.0%	100.0%
			% within SSDM	4.7%	8.0%	5.0%	0.0%	6.7%	4.9%
			Adjusted Residual	-.1	.8	.1	-1.1	.3	
		3 Federal	Count	10	9	54	8	5	86
			Expected Count	18.0	10.5	42.0	9.2	6.3	86.0
			% within INFR	11.6%	10.5%	62.8%	9.3%	5.8%	100.0%
			% within SSDM	23.3%	36.0%	54.0%	36.4%	33.3%	42.0%
			Adjusted Residual	-2.8	-.6	3.4	-.6	-.7	
		4 IT Duopoly	Count	7	1	17	3	0	28
			Expected Count	5.9	3.4	13.7	3.0	2.0	28.0
			% within INFR	25.0%	3.6%	60.7%	10.7%	0.0%	100.0%
			% within SSDM	16.3%	4.0%	17.0%	13.6%	0.0%	13.7%
			Adjusted Residual	.6	-1.5	1.4	.0	-1.6	
		5 Feudal	Count	3	2	1	1	2	9
			Expected Count	1.9	1.1	4.4	1.0	.7	9.0
			% within INFR	33.3%	22.2%	11.1%	11.1%	22.2%	100.0%
			% within SSDM	7.0%	8.0%	1.0%	4.5%	13.3%	4.4%
			Adjusted Residual	.9	.9	-2.3	.0	1.8	
		Total	Count	43	25	100	22	15	205
			Expected Count	43.0	25.0	100.0	22.0	15.0	205.0
			% within INFR	21.0%	12.2%	48.8%	10.7%	7.3%	100.0%
			% within SSDM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX E: PARTIAL LEAST SQUARES OF GROUP COMPARISONS

Shared Services Relationship – Provider

Quality of Measurement Model

Inter-Construct Correlations and Reliability Measures

				Correlations of among Constructs					
Composite Reliability	Cronachs Alpha	Average Variance Extracted	Construct	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
0.967	0.962	0.748	Business Value	0.865					
0.969	0.952	0.913	Gap Assessment	0.402	0.955				
0.889	0.836	0.667	Independent Review	0.656	0.496	0.816			
0.940	0.924	0.725	Joint Working	0.735	0.269	0.675	0.851		
0.927	0.911	0.617	Profession-wide Oversight	0.759	0.635	0.792	0.672	0.786	
1.000	1.000	1.000	Structural Gap	-0.211	-0.088	-0.082	-0.027	-0.081	1.000

Outer Model Loadings and Cross Loadings

	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
BVP1	0.878	0.367	0.581	0.626	0.671	-0.160
BVP2	0.916	0.377	0.594	0.716	0.720	-0.130
BVP3	0.843	0.429	0.606	0.652	0.712	-0.176
BVP4	0.895	0.321	0.597	0.617	0.690	-0.203
BVP5	0.876	0.338	0.585	0.634	0.673	-0.170
BVP6	0.784	0.271	0.467	0.426	0.532	-0.182
BVP7	0.864	0.369	0.584	0.585	0.682	-0.193
BVP8	0.878	0.347	0.517	0.654	0.606	-0.217
BVP9	0.831	0.308	0.514	0.642	0.601	-0.269
BVP10	0.878	0.334	0.606	0.752	0.652	-0.136
GA1	0.339	0.948	0.446	0.198	0.563	-0.096
GA2	0.389	0.960	0.511	0.268	0.624	-0.098
GA3	0.418	0.958	0.463	0.294	0.627	-0.063
IR1	0.466	0.530	0.764	0.469	0.681	-0.051
IR2	0.682	0.232	0.775	0.694	0.557	-0.125
IR3	0.451	0.475	0.871	0.511	0.689	-0.030
IR4	0.452	0.454	0.850	0.442	0.682	-0.032
JW1	0.555	0.133	0.474	0.839	0.504	0.009
JW2	0.623	0.144	0.514	0.872	0.532	-0.012
JW3	0.603	0.198	0.561	0.886	0.592	0.018
JW4	0.523	0.217	0.547	0.850	0.469	0.069
JW5	0.750	0.305	0.602	0.894	0.624	-0.104
JW6	0.647	0.344	0.723	0.760	0.673	-0.078
POA1	0.675	0.556	0.720	0.596	0.881	-0.104
POA2	0.695	0.463	0.704	0.695	0.867	-0.016
POA3	0.752	0.437	0.682	0.653	0.822	-0.187
POA4	0.703	0.427	0.718	0.645	0.840	-0.140
POB1	0.499	0.666	0.556	0.379	0.744	-0.063
POB2	0.363	0.480	0.477	0.300	0.586	0.130
POB3	0.448	0.559	0.540	0.352	0.759	0.005
POB4	0.448	0.547	0.484	0.394	0.746	0.013
SG1	-0.211	-0.088	-0.082	-0.027	-0.081	1.000

Quality of Structural Model

Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Value (Two-tailed)	P Value (One-tailed)
Gap Assessment -> Business Value	-0.035	-0.054	0.039	0.039	0.895	0.372	0.186
Independent Review -> Business Value	-0.021	-0.062	0.047	0.047	0.438	0.662	0.331
Joint Working -> Business Value	0.414	0.412	0.071	0.071	5.797	0.000	0.000
Profession-wide Oversight -> Business Value	0.506	0.499	0.093	0.093	5.463	0.000	0.000
Structural Gap -> Business Value	-0.163	-0.162	0.043	0.043	3.775	0.000	0.000

Effect Size of Exogenous Constructs

	R^2 included	R^2 excluded	f^2
Gap Assessment	0.695	0.694	0.00
Independent Review	0.695	0.695	0.00
Joint Working	0.695	0.618	0.25
Profession-wide Oversight	0.695	0.633	0.20
Structural Gap	0.695	0.669	0.09

Indicator Crossvalidated Redundancy (Q^2)

Indicator	Q^2	Indicator	Q^2	Indicator	Q^2	Indicator	Q^2
BVP1	0.493	BVP9	0.476	IR4	0.539	POA2	0.649
BVP2	0.587	BVP10	0.573	JW1	0.592	POA3	0.531
BVP3	0.524	GA1	0.769	JW2	0.647	POA4	0.589
BVP4	0.493	GA2	0.774	JW3	0.681	POB1	0.454
BVP5	0.488	GA3	0.743	JW4	0.634	POB2	0.252
BVP6	0.285	IR1	0.346	JW5	0.681	POB3	0.490
BVP7	0.445	IR2	0.236	JW6	0.410	POB4	0.475
BVP8	0.484	IR3	0.592	POA1	0.689	SG1	0.000

Construct Crossvalidated Redundancy (Q^2)

Indicator	Q^2
Business Value	0.485

Shared Services Relationship – Client

Quality of Measurement Model

Inter-Construct Correlations and Reliability Measures

				Correlations of among Constructs					
Composite Reliability	Cronachs Alpha	Average Variance Extracted	Construct	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
0.955	0.948	0.682	Business Value	0.826					
0.934	0.895	0.825	Gap Assessment	0.432	0.908				
0.911	0.869	0.722	Independent Review	0.528	0.571	0.849			
0.936	0.917	0.708	Joint Working	0.496	0.297	0.401	0.841		
0.888	0.855	0.501	Profession-wide Oversight	0.642	0.626	0.657	0.631	0.708	
1.000	1.000	1.000	Structural Gap	0.050	0.210	0.200	-0.006	0.211	1.000

Outer Model Loadings and Cross Loadings

	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
VP1	0.764	0.291	0.439	0.369	0.465	0.079
VP2	0.804	0.341	0.427	0.420	0.481	0.095
VP3	0.880	0.395	0.459	0.432	0.556	0.024
VP4	0.855	0.339	0.418	0.459	0.548	0.001
VP5	0.864	0.433	0.498	0.494	0.589	0.008
VP6	0.768	0.259	0.346	0.314	0.432	0.004
VP7	0.867	0.455	0.544	0.365	0.611	0.082
VP8	0.838	0.381	0.465	0.365	0.550	0.051
VP9	0.755	0.328	0.416	0.359	0.507	0.037
VP10	0.854	0.301	0.319	0.505	0.530	0.037
GA1	0.367	0.916	0.551	0.271	0.582	0.279
GA2	0.455	0.922	0.529	0.290	0.631	0.109
GA3	0.336	0.887	0.472	0.243	0.473	0.207
IR1	0.380	0.492	0.789	0.285	0.532	0.184
IR2	0.422	0.436	0.756	0.468	0.541	0.226
IR3	0.509	0.498	0.923	0.309	0.585	0.130
IR4	0.471	0.517	0.917	0.311	0.575	0.154
JW1	0.418	0.150	0.257	0.818	0.460	0.015
JW2	0.390	0.253	0.300	0.859	0.531	-0.094
JW3	0.395	0.297	0.348	0.891	0.580	0.013
JW4	0.422	0.181	0.358	0.823	0.518	-0.095
JW5	0.518	0.335	0.413	0.875	0.613	0.088
JW6	0.318	0.279	0.334	0.777	0.456	0.025
POA1	0.502	0.457	0.554	0.639	0.790	0.141
POA2	0.571	0.343	0.361	0.589	0.768	0.138
POA3	0.451	0.380	0.402	0.700	0.793	0.164
POA4	0.492	0.444	0.489	0.704	0.808	0.177
PO1	0.348	0.525	0.445	0.076	0.590	0.116
PO2	0.410	0.448	0.554	0.214	0.628	0.241
PO3	0.395	0.542	0.480	0.210	0.621	0.074
PO4	0.416	0.488	0.485	0.229	0.617	0.142
SG1	0.050	0.210	0.200	-0.006	0.211	1.000

Quality of Structural Model

Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Value (Two-tailed)	P Value (One-tailed)
Gap Assessment -> Business Value	0.033	0.060	0.045	0.045	0.728	0.468	0.234
Independent Review -> Business Value	0.190	0.191	0.077	0.077	2.487	0.014	0.007
Joint Working -> Business Value	0.142	0.148	0.066	0.066	2.158	0.032	0.016
Profession-wide Oversight -> Business Value	0.425	0.429	0.084	0.084	5.059	0.000	0.000
Structural Gap -> Business Value	-0.083	-0.084	0.042	0.042	1.979	0.049	0.025

Effect Size of Exogenous Constructs

	R^2 included	R^2 excluded	f^2
Gap Assessment	0.454	0.453	0.00
Independent Review	0.454	0.435	0.03
Joint Working	0.454	0.443	0.02
Profession-wide Oversight	0.454	0.395	0.11
Structural Gap	0.454	0.447	0.01

Indicator Crossvalidated Redundancy (Q^2)

Indicator	Q^2	Indicator	Q^2	Indicator	Q^2	Indicator	Q^2
VP1	0.235	VP9	0.258	IR4	0.684	POA2	0.418
VP2	0.258	VP10	0.297	JW1	0.531	POA3	0.508
VP3	0.309	GA1	0.651	JW2	0.623	POA4	0.523
VP4	0.345	GA2	0.594	JW3	0.684	PO1	0.213
VP5	0.393	GA3	0.593	JW4	0.550	PO2	0.229
VP6	0.185	IR1	0.425	JW5	0.604	PO3	0.233
VP7	0.377	IR2	0.329	JW6	0.488	PO4	0.264
VP8	0.303	IR3	0.673	POA1	0.519	SG1	0.000

Construct Crossvalidated Redundancy (Q^2)

Indicator	Q^2
Business Value	0.296

Organisation Size – Large

Quality of Measurement Model

Inter-Construct Correlations and Reliability Measures

				Correlations of among Constructs					
Composite Reliability	Cronachs Alpha	Average Variance Extracted	Construct	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
0.970	0.966	0.766	Business Value	0.875					
0.205	0.876	0.160	Gap Assessment	0.191	0.400				
0.905	0.857	0.707	Independent Review	0.799	0.085	0.841			
0.955	0.943	0.778	Joint Working	0.762	0.286	0.748	0.882		
0.924	0.906	0.608	Profession-wide Oversight	0.836	0.256	0.809	0.814	0.779	
1.000	1.000	1.000	Structural Gap	-0.213	-0.093	-0.079	-0.056	-0.098	1.000

Outer Model Loadings and Cross Loadings

	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
BVP1	0.881	0.142	0.679	0.663	0.705	-0.142
BVP2	0.918	0.224	0.735	0.733	0.795	-0.131
BVP3	0.867	0.320	0.692	0.655	0.737	-0.193
BVP4	0.893	0.049	0.726	0.685	0.732	-0.175
BVP5	0.892	0.156	0.711	0.698	0.726	-0.165
BVP6	0.796	0.023	0.607	0.505	0.629	-0.183
BVP7	0.873	0.136	0.732	0.625	0.760	-0.202
BVP8	0.889	0.229	0.666	0.649	0.711	-0.258
BVP9	0.853	0.156	0.703	0.648	0.741	-0.239
BVP10	0.883	0.213	0.728	0.781	0.762	-0.182
GA1	-0.079	-0.148	0.090	0.004	-0.059	0.190
GA2	0.061	0.514	0.129	0.178	0.108	0.015
GA3	0.039	0.441	0.114	0.172	0.106	0.222
IR1	0.554	0.126	0.679	0.602	0.681	-0.067
IR2	0.774	0.075	0.897	0.718	0.710	-0.064
IR3	0.696	0.104	0.896	0.651	0.694	-0.087
IR4	0.640	-0.013	0.872	0.534	0.644	-0.049
JW1	0.579	0.187	0.614	0.863	0.674	-0.003
JW2	0.691	0.389	0.648	0.910	0.722	-0.098
JW3	0.672	0.273	0.684	0.927	0.752	-0.015
JW4	0.590	0.191	0.624	0.889	0.642	0.028
JW5	0.765	0.320	0.686	0.898	0.772	-0.100
JW6	0.696	0.126	0.683	0.801	0.720	-0.083
POA1	0.790	0.272	0.712	0.772	0.896	-0.122
POA2	0.777	0.224	0.762	0.783	0.879	-0.037
POA3	0.760	0.126	0.728	0.764	0.850	-0.130
POA4	0.742	0.162	0.727	0.731	0.828	-0.131
POB1	0.570	0.260	0.535	0.480	0.741	-0.162
POB2	0.444	0.076	0.464	0.431	0.552	0.180
POB3	0.515	0.246	0.535	0.495	0.738	-0.101
POB4	0.462	0.251	0.472	0.457	0.693	-0.023
SG1	-0.213	-0.093	-0.079	-0.056	-0.098	1.000

Quality of Structural Model

Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Value (Two-tailed)	P Value (One-tailed)
Gap Assessment -> Business Value	-0.009	-0.060	0.042	0.042	0.209	0.834	0.417
Independent Review -> Business Value	0.308	0.327	0.097	0.097	3.177	0.002	0.001
Joint Working -> Business Value	0.173	0.178	0.093	0.093	1.858	0.065	0.032
Profession-wide Oversight -> Business Value	0.434	0.412	0.084	0.084	5.162	0.000	0.000
Structural Gap -> Business Value	-0.137	-0.124	0.038	0.038	3.565	0.000	0.000

Effect Size of Exogenous Constructs

	R^2 included	R^2 excluded	f^2
Gap Assessment	0.768	0.768	0.00
Independent Review	0.768	0.740	0.12
Joint Working	0.768	0.759	0.04
Profession-wide Oversight	0.768	0.724	0.19
Structural gap	0.768	0.750	0.08

Indicator Crossvalidated Redundancy (Q^2)

Indicator	Q^2	Indicator	Q^2	Indicator	Q^2	Indicator	Q^2
BVP1	0.508	BVP9	0.561	IR4	0.599	POA2	0.670
BVP2	0.643	BVP10	0.642	JW1	0.648	POA3	0.597
BVP3	0.567	GA1	-0.563	JW2	0.742	POA4	0.555
BVP4	0.566	GA2	-0.643	JW3	0.781	POB1	0.452
BVP5	0.577	GA3	-0.211	JW4	0.702	POB2	0.208
BVP6	0.418	IR1	0.212	JW5	0.696	POB3	0.448
BVP7	0.563	IR2	0.599	JW6	0.497	POB4	0.388
BVP8	0.557	IR3	0.622	POA1	0.703	SG1	0.000

Construct Crossvalidated Redundancy (Q^2)

Indicator	Q^2
Business Value	0.560

Organisation Size – Small

Quality of Measurement Model

Inter-Construct Correlations and Reliability Measures

				Correlations of among Constructs					
Composite Reliability	Cronachs Alpha	Average Variance Extracted	Construct	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
0.950	0.942	0.657	Business Value	0.810					
0.911	0.869	0.773	Gap Assessment	0.154	0.879				
0.879	0.813	0.647	Independent Review	0.361	0.348	0.804			
0.919	0.895	0.654	Joint Working	0.444	0.038	0.380	0.808		
0.872	0.839	0.471	Profession-wide Oversight	0.544	0.367	0.560	0.503	0.686	
1.000	1.000	1.000	Structural Gap	0.042	0.029	0.102	-0.010	0.152	1.000

Outer Model Loadings and Cross Loadings

	Business Value	Gap Assessment	Independent Review	Joint Working	Profession-wide Oversight	Structural Gap
BVP1	0.781	0.186	0.359	0.304	0.464	0.055
BVP2	0.848	0.016	0.199	0.441	0.396	0.095
BVP3	0.816	0.165	0.333	0.381	0.429	0.098
BVP4	0.840	0.217	0.391	0.401	0.548	0.051
BVP5	0.871	0.186	0.275	0.355	0.513	-0.051
BVP6	0.847	0.119	0.351	0.398	0.521	-0.033
BVP7	0.730	0.020	0.148	0.210	0.269	-0.008
BVP8	0.850	0.130	0.315	0.319	0.459	0.056
BVP9	0.799	0.103	0.267	0.376	0.378	0.088
BVP10	0.706	0.027	0.202	0.366	0.319	-0.011
GA1	0.093	0.838	0.259	0.032	0.225	0.016
GA2	0.187	0.958	0.339	0.049	0.411	0.026
GA3	0.050	0.837	0.331	-0.018	0.241	0.049
IR1	0.260	0.279	0.773	0.161	0.427	0.082
IR2	0.327	0.215	0.659	0.476	0.353	0.137
IR3	0.276	0.327	0.887	0.255	0.491	0.037
IR4	0.275	0.294	0.878	0.275	0.521	0.058
JW1	0.387	-0.090	0.186	0.795	0.321	0.002
JW2	0.266	-0.027	0.252	0.797	0.377	-0.043
JW3	0.319	0.060	0.337	0.840	0.484	0.016
JW4	0.354	0.107	0.326	0.798	0.375	-0.130
JW5	0.475	0.067	0.360	0.877	0.465	0.082
JW6	0.279	0.062	0.396	0.737	0.426	-0.015
POA1	0.356	0.345	0.522	0.448	0.770	0.109
POA2	0.485	0.206	0.344	0.505	0.805	0.114
POA3	0.467	0.219	0.366	0.585	0.810	0.110
POA4	0.469	0.197	0.461	0.620	0.840	0.128
POB1	0.193	0.361	0.332	-0.094	0.477	0.136
POB2	0.254	0.235	0.391	0.046	0.528	0.059
POB3	0.266	0.315	0.373	0.023	0.556	0.097
POB4	0.358	0.314	0.363	0.137	0.594	0.100
SG1	0.042	0.029	0.102	-0.010	0.152	1.000

Quality of Structural Model

Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Value (Two-tailed)	P Value (One-tailed)
Gap Assessment -> Business Value	-0.027	-0.052	0.042	0.042	0.646	0.519	0.260
Independent Review -> Business Value	0.058	0.081	0.059	0.059	0.989	0.324	0.162
Joint Working -> Business Value	0.212	0.226	0.069	0.069	3.082	0.002	0.001
Profession-wide Oversight -> Business Value	0.418	0.410	0.076	0.076	5.521	0.000	0.000
Structural Gap -> Business Value	-0.025	-0.045	0.033	0.033	0.763	0.446	0.223

Effect Size of Exogenous Constructs

	R^2 included	R^2 excluded	f^2
Gap Assessment	0.338	0.337	0.00
Independent Review	0.338	0.335	0.00
Joint Working	0.338	0.309	0.04
Profession-wide Oversight	0.338	0.248	0.14
Structural Gap	0.338	0.337	0.00

Indicator Crossvalidated Redundancy (Q^2)

Indicator	Q^2	Indicator	Q^2	Indicator	Q^2	Indicator	Q^2
BVP1	0.189	BVP9	0.145	IR4	0.572	POA2	0.497
BVP2	0.233	BVP10	0.202	JW1	0.473	POA3	0.486
BVP3	0.303	GA1	0.472	JW2	0.510	POA4	0.557
BVP4	0.269	GA2	0.447	JW3	0.596	POB1	0.125
BVP5	0.274	GA3	0.591	JW4	0.474	POB2	0.161
BVP6	0.065	IR1	0.375	JW5	0.594	POB3	0.177
BVP7	0.193	IR2	0.079	JW6	0.408	POB4	0.222
BVP8	0.175	IR3	0.603	POA1	0.504	SG1	0.000

Construct Crossvalidated Redundancy (Q^2)

Indicator	Q^2
Business Value	0.205